

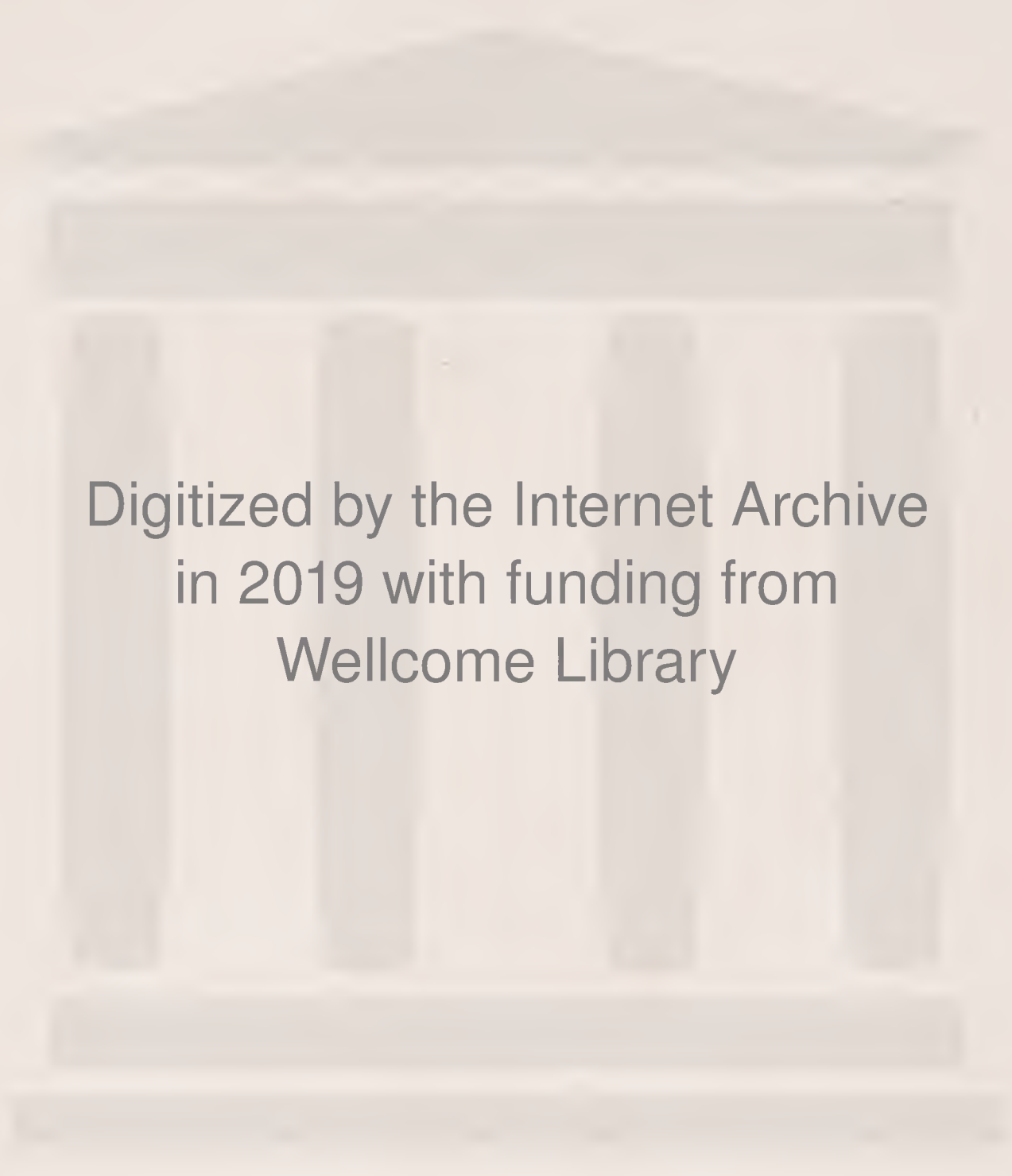
**British Society for the  
Study of Orthodontics  
1936**







TRANSACTIONS  
OF THE  
BRITISH SOCIETY FOR THE  
STUDY OF ORTHODONTICS  
1936



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TRANSACTIONS

OF THE

British Society for the  
Study of Orthodontics

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1936

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[January 1st, 1937]

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Annual General Meeting, Reports and Accounts



# The British Society for the Study of Orthodontics

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## THE FACULTY OF OBSERVATION WITH PARTICULAR REFERENCE TO ORTHODONTICS.\*

By F. BOCQUET BULL, M.R.C.S., L.R.C.P., L.D.S.Eng.

It might be as well to commence with a true definition of what we mean by observation. To do so, let us turn to one of the larger dictionaries, and here I quote from the Imperial Dictionary.

1. "The act of observing, or taking notice ; the act of seeing or fixing the mind on anything. We apply the word to simple vision, as when one says, ' a spot on the sun did not fall under his observation ' ; or to the notice or cognizance of the mind, as when one says, ' the distinction made by the orator escaped his observation. When, however, it expresses vision, it often represents a more fixed or particular view than a mere transient sight ; as an astronomical observation."

2. "Notion gained by observing ; the effect or result of seeing or taking cognizance in the mind, and either retained in the mind or expressed in words ; inference or something arising out of the act of seeing or noticing, or that which is produced by thinking or reflecting on a subject. We often say, ' I made the observation in my own mind ' ; but properly an observation is that which is expressed as the result of viewing or thinking."

Curiously enough Dr. Isaac Watts, in the chapter on " Rules Relating to Observation " in his book entitled " The Improvement of the Mind," states, " Though observation in the strict sense of the word, and as it is distinguished from meditation and study, is the first means of improvement, and in its strictest sense does not include in it any reasonings of the mind upon the things which we observe, or inference drawn from them ; yet the motions of the mind are so exceeding swift, that it is hardly possible for a thinking man to gain experiences or observations without making some secret or short reflections upon them ; and, therefore, in giving a few directions concerning this method of improvement, I shall not so narrowly confine myself to the first mere impression of objects on the mind by observation ; but include also some hints which relate to the first, most easy, and obvious reflections or reasoning arising from them."

There are other uses of the word mentioned in the Dictionary with which for the purpose of this address we need not bother, but from the definition that I have given to you we see that observation is made up of two definite things, viz., the sense of perception and the act of reflection.

Now obviously this faculty is similar to other faculties in not being bestowed upon us all equally. Some have it naturally to a marked degree, others to a lesser degree ; and whilst some develop it to a certain extent, in others it lies more or less dormant.

Ill-health, fear, over-excitement, nervousness and like forces naturally dull it, and in connection with this I should like to show you a good example of how a force of this nature can act. It is a photograph of a model kindly lent to me for the purpose by Dr.

\* Presidential Address, January, 1936.

Northcroft, who was a co-examiner with me some little time ago. The model\* was shown to a candidate, and he was asked to tell us what he saw. For quite two minutes we tried in every way to drag the correct answer from him, but failed to do so. I am sure that if he had been asked the same question on an ordinary occasion he would have given the correct answer in a few seconds.

It has been responsible for some of the greatest discoveries in Science, some of the greatest inventions, some of the greatest works of literature, and is to a large extent actually the prime basis of various occupations, examples of which are quite easily given, such as the work of a cartoonist, or the profession of journalism where often the small and unimportant things, which keen observation may detect, are of more interest to the general public than the main issue.

In the region of Science endless discoveries and inventions have been due to a great extent to the power of observation of the scientist concerned. I need only mention two of our great scientists, Sir Isaac Newton and Charles Darwin, to give you outstanding examples. Observations by Newton in his work on the Refraction of Light and the Theory of Gravitation played a great part, and although there is no definite reason for believing the story of the falling apple, we know definitely that it was in the garden of the Manor House at Woolsthorpe, whence he had fled from the plague, that Newton gained his first ideas of Gravitation.

As Byron says in his poem, "Don Juan" :

" When Newton saw an apple fall, he found  
In that slight startle from his contemplation,  
A mode of proving that the earth was round,  
In a most natural whirl called gravitation."

We all know to what a great extent the powers of observation were used by Charles Darwin. Let me give you one small example. In his "Descent of Man," he writes as follows :—"The tendency in savages to imagine that natural objects and agencies are animated by spiritual or living essences is perhaps illustrated by a little fact which I once noticed : my dog, a full-grown and very sensible animal, was lying on the lawn during a hot and still day ; but at a little distance a slight breeze occasionally moved an open parasol, which would have been wholly disregarded by the dog, had anyone stood near it. As it was, every time that the parasol slightly moved, the dog growled fiercely and barked. He must, I think, have reasoned to himself in a rapid and unconscious manner, that movement without any apparent cause indicated the presence of some strange living agent, and that no stranger had a right to be in his territory."

But apart from scientific discoveries and inventions, which are frequently the result of what one might term confined observation at particular periods on particular subjects, I beg to suggest that where one finds this faculty most highly developed, and where it has been turned to the highest account, is in the region of literature. This faculty, combined with a power of description seldom approached and never equalled, enabled Charles Dickens to write that marvellous quantity and quality of literature that he did in a life-

\* The model showed the absence of an incisor without any spacing.

time that terminated at the comparatively early age of not quite 59 years. His powers of observation were applied to everyone and everything and, combined with his powers of describing what he had observed, have given to us those wonderful characters whose names are daily, if not hourly, used to describe the appearance, virtues, or vices of any man or woman whom in our turn we wish to describe.

Listen to this. "It was Miss Murdstone who was arrived, and a gloomy-looking lady she was ; dark like her brother, whom she greatly resembled in face and voice ; and with very heavy eyebrows, nearly meeting over her large nose, as if, being disabled by the wrongs of her sex from wearing whiskers, she had carried them to that account. She brought with her two uncompromising hard black boxes, with her initials on the lids in hard brass nails. When she paid the coachman she took money out of a hard steel purse, and she kept the purse in a very jail of a bag which hung upon her arm by a heavy chain, and shut up like a bite. I had never, at that time, seen such a metallic lady altogether as Miss Murdstone was."

Perhaps some of you have read the description of Mr. Carker in "Dombey and Son." If you have not, I advise you to read the book. His great physical feature is his teeth. Dickens describes him thus : "Mr. Carker was a gentleman thirty-eight or forty years old, of a florid complexion, and with two unbroken rows of glistening teeth, whose regularity and whiteness were quite distressing. It was impossible to escape the observation of them, for he showed them whenever he spoke ; and bore so wide a smile upon his countenance (a smile, however, very rarely, indeed, extending beyond his mouth), that there was something in it like the snarl of a cat. He affected a stiff white cravat, after the example of his principal, and was always closely buttoned up and tightly dressed. His manner towards Mr. Dombey was deeply conceived and perfectly expressed." Again, "Mr. Carker, the Manager, did a great deal of business in the course of the day, and bestowed his teeth upon a great many people." And, "The Manager inclined his head, and showed his teeth, as who should say, in answer to some careless small-talk, 'Dear me ! Is that the case ? ' but never said a word."

Let us take just one more illustration of the description of another character in "Dombey and Son," namely, Solomon Gills, and see how Dickens' observation of people was used to the utmost to make up the description or formation of his characters. "Here he lived, too, in skipper-like state, all alone with his nephew, Walter, a boy of fourteen who looked quite enough like a midshipman, to carry out the prevailing idea. But there it ended, for Solomon Gills himself (more generally called Old Sol) was far from having a maritime appearance. To say nothing of his Welsh wig, which was as plain and stubborn a Welsh wig as ever was worn, and in which he looked like anything but a Rover, he was a slow, quiet-spoken thoughtful old fellow, with eyes as red as if they had been small suns looking at you through a fog ; and a newly awakened manner, such as he might have acquired by having stared for three or four days successively, through every optical instrument in his shop, and suddenly come back to the world again, to find it green. The only change ever known in his outward man, was from a complete suit

of coffee-colour cut very square, and ornamented with glaring buttons, to the same suit of coffee-colour minus the inexpressibles, which were then of a pale nankeen. He wore a very precise shirtfrill, and carried a pair of first-rate spectacles on his forehead, and a tremendous chronometer in his fob, rather than doubt which precious possession, he would have believed in a conspiracy against it of all the clocks and watches in the city, and even of the very Sun itself. Such as he was, such as he had been the shop and parlor behind the little midshipman, for years upon years : going regularly aloft to bed every night in a howling garret remote from the lodgers, where, when gentlemen of England who lived below at ease had little or no idea of the state of the weather, it often blew great guns."

I often wonder what Dickens would have observed in the faces of some of our orthodontic patients. I venture to say that his description of them would have been more than illuminating.

Finally regarding observation in general let me give to you three rules from Dr. Watts' book :

" Endeavour therefore to derive some instruction or improvement of the mind from everything which you see and hear, from every thing which occurs in human life, from everything within you, or without you."

" Among all these observations write down what is more remarkable or uncommon : reserve these remarks in store for proper occasions, and at proper seasons take a review of them. Such a practice will give you a habit of useful thinking : this will secure the workings of your soul from running to waste, and by this means even your looser moments will turn to happy account both here and hereafter."

" Be not too hasty to erect general theories from a few particular observations, appearances or experiments. This is what logicians call a false induction. When general observations are drawn from so many particulars as to become certain and indubitable, these are jewels of knowledge, comprehending great treasure in a little room ; but they are therefore to be made with the greater care and caution—lest errors become large and diffusive, if we should mistake in these general notions."

" A hasty determination of some universal principles, without a due survey of all the particular cases which may be included in them, is the way to lay a trap for our own understandings in their pursuit of any subject, and we shall often be taken captives into mistake and falsehood. Viveo, in his youth observed, that on three Christmas days together there fell a good quantity of snow, and now hath writ it down in his almanac as a part of his wise remarks on the weather. that it will always snow at Christmas. Euron, a young lad, took notice ten times that there was a sharp frost when the wind was in the north-east ; therefore in the middle of last July he almost expected it should freeze, because the weather-cocks shewed him a north-east wind : and he was still more disappointed when he found it a very sultry season. It is the same hasty judgment that hath thrown scandal on a whole nation for the sake of some culpable characters belonging to some particular natives of that country ; whereas all the French men are not gay and airy ; all the Italians are not jealous and revengeful ; nor are all the English over-run with the spleen."

Having thus talked about observation in general, let us see in what manner we can apply it to the practice of orthodontics. To begin with, may I be permitted to assert that given an average knowledge on one's subject with which to work, the highly observant individual would observe all, or nearly all that there was to be observed, automatically, whether of value to his particular subject or not. On the other hand, less observant individuals would miss much information that was to be obtained in this manner. Stated in a different way, if we use our dictionary definition that observation consists of perception and reflection, then the first individual will make more use of the reflective part of observation than the second, for it is obvious that unless the ocular powers differ, perception must be the same in each case.

However, matters can be levelled up to a certain extent by knowing beforehand the particular points one's attention should be directed to, and it is with this view in mind that I put before you just a few that have occurred to me during a long period of hospital and private practice.

You may be asking yourselves why I am applying this faculty of observation particularly to the practice of orthodontics. My answer is—If we were in the fortunate position of being able to rectify, say, a difficult case of mal-occlusion in from two to three weeks, instead of, as is often the case, two or three years ; if our patients were, say, little angels instead of being normal or abnormal children ; and if parents were such as I, when very young, thought they were, incapable of wrong in anything, then, of course, matters would be easy. But the reverse in every particular being the case, we are placed in an almost unique position, a position that renders it essential that we take notice of everything, no matter how little, before embarking on the actual treatment of the case.

Now straight away let me say that I am not going to lay before you those points particularly calling for observation in the treatment of the case proper, either in the matter of ætiology, diagnosis, prognosis or actual treatment, or those routine observations that have to be made to make up a general and dental history of the patient. There are, of course, many in these departments, but they have been worked out *in extenso*, and tabulated under the heading of " Suggestions for Orthodontic Case-Taking " in the amended report of the Education Committee of this Society, which report was published in 1925.

Although not laying the slightest claim to any of the powers of a psycho-analyst, I am going to confine myself entirely to a group of observations, which, as far as I know, have never been much stressed, viz. the observation of certain characteristics of the patient and parent which may help greatly in regard to any line of treatment which may be open to us, and even, in certain cases, warn us against treatment at all.

What and when, then, are these points to be observed ? We will take it that domestic and financial factors are favourable.

To answer the latter question first—Observation should take place on seeing the patient and parent at the first visit, for usually as a result of this visit a rough line of treatment is mapped out, and although observation can and should go on at later visits, one does not wish particularly to change a line of treatment once commenced

purely for the sake of some extraneous factor which might have influenced one had it been observed earlier.

Taking the other question—What are the chief points to be observed? I have already told you that they are entirely connected with the patient and parent, and in attempting to formulate a list of these points, I do not claim that it is in any shape or form sufficient, but it covers the majority of points that I am always on the look-out for, and seems at any rate to give a solid foundation on which one may make a stand. You, yourselves, may think of other points worthy of observation—well, all to the good, as you will profit all the more by having the power to observe them.

As the prime object under consideration, let me take the patient first. From the moment the patient enters the room, bring your powers of observation into play. I well remember some years ago, purely for experience, entering the salon of a famous lady clairvoyante. The thing that impressed me far more than anything else, was, if I might so term it, my reception. I was shown up a small flight of stairs by an elderly and very dignified butler to a door which he flung open in the grand manner, and there directly facing me with her back to the fireplace, for this stood in the middle of the room opposite the door, rather a clever even if an accidental arrangement, stood a tall and majestic figure clothed in flowing robes of a somewhat Oriental type. It gave me quite an uncanny feeling, probably intentional, and by the time I had recovered my sangfroid, I certainly had the idea that I had been well analysed and summed-up in the short space of time subsequent to my entry, and that as much had been found out about me as was necessary.

I do not suggest that you should adopt this kind of procedure, but I think that it well emphasises my point, and for the purposes of observation I give you the following list :

1. *The patient's attitude to its parent.*

A child's attitude to its parent is of paramount importance. I think that we can safely say that the majority of children in this respect are quite satisfactory. On the other hand, there are a certain number whose attitude is one of varying indifference ranging from slight to supreme. I have in mind a boy whom once I treated, and what that boy did not pick up in my room and look at was probably too heavy for him to do so.

Fond mother would say as boy picked up something from my desk, "Augustus, will you put that down." Augustus, with the speed of a car in a traffic block would do so, but only with the idea of picking up another article, which he at once did. Again, "Augustus, will you put that down, didn't I tell you not to touch things."

She certainly did ; but why she bothered to do so, I do not know. His attitude to her regarding obedience was one of complete indifference. As far as I know I have no sadistic tendencies, but if I had, that boy would have been directly responsible for them.

Early observation of this type of patient will certainly enable you to be on your guard, for it is obvious that the parent is going to be of little value as a helpful factor during the course of treatment.

2. *The attitude of the patient to the practitioner* is governed to a great extent by temperament, and partly, of course, by the manner, happy or otherwise, of the practitioner. But again it is obvious that if the patient adopts what one might term a rebellious attitude,

treatment may not be as simple as that of a child of a more affable nature.

Here, doubtless, the attitude of the patient to the practitioner will be quite easily perceived, but this perception is of little account, unless reflection follows.

3. *Conversation.* Much may be observed under this heading, either by listening to the conversation between parent and child, or by observing the type of conversation that takes place between one's self and the patient.

Does the child speak freely and easily, or is it more or less dumb?

What type of subject seems to interest the child, and is the child obviously interested in its conversation, or merely talking for talking's sake?

Is speech of a nervous or excitable type, or of the phlegmatic variety?

Does it denote an intelligent or a stupid mind?

4. *Dress.* A child may be attired in a variety of ways—expensively, poorly, gaudily or shabbily, but no matter which of these modes is adopted, they none of them preclude the virtue of neatness nor the vice of untidiness.

Although the subject of dress, to which may be allied quite well the subject of appearance, is to a great extent the responsibility of the parent, the child is also partly responsible, and if a neat and tidy appearance be presented—and all the wiles of a mother will not produce it if the tendency is not present in the child—then good. For a child neat in its attire or appearance in all probability will apply the same line of reasoning to its facial appearance; and at the usual age of orthodontic treatment this remark does not only apply to the female, for at this early age there is but little difference between the ideas of the male and female in this respect—the advent of sex-attraction is a thing of the future.

5. *Hygiene or Cleanliness.* With one exception I do not want to lay too much stress on what one may observe in this respect. I do not think that the average child pays much attention to whether he or she is particularly clean or reasonably dirty. Unlike some of you, I have not had the advantage of passing children of my own for the purpose of studying this particular point, and so I may be taken to task for making this statement.

On the other hand there are a few cases, and then usually only met with in hospital practice, where the observation of a complete lack of cleanliness is at once a decisive factor in the line of treatment to be adopted, viz. if any, the shorter the better.

The exception to which I wish to draw your attention is the type of mouth occasionally seen in young children, that seems particularly prone to inflammatory conditions. Frequently combined with this condition, and because of or even as a result of it, there is present a generally “dirty” state of the mouth. In other words, we have a vicious circle. Now, in some of these cases the condition by careful treatment clears up, but in others it persists in spite of all treatment. Observe well and act accordingly.

Although encroaching upon that part of orthodontic observation, viz. that included in the dental history of the patient, which is not a part of my subject, it seems, when talking of general cleanliness, an opportune moment to mention it.

6. *Degree of Sensibility.* Of this I need say but little. It is obvious to all that treatment must be easier with the co-operation of a sensible patient than with a dullard. It is to be observed with what I have already mentioned, that is the conversation, as well as with the patient's actions.

Degrees of sensibility are many, but it is only to find out those lying between the stages of normal and dullness that it is really necessary to use one's powers of observation. Cases, such as congenital idiots, are too painfully obvious.

7. *Physique.* Again I do not wish to dilate upon this particular point. It is enlarged upon in most text-books, and comes rightly under the general history of the patient. I would say, however, that observation, and minute observation too, on this particular point will repay the practitioner over and over again.

8. *Temperament.* This is naturally of great importance. A child may be of a sanguine, phlegmatic, nervous, or a melancholic type, or even of that horrible type known as the precocious child. To a large extent most of the previous points that I have mentioned are influenced by temperament.

I loathe the precocious child, but I would much sooner deal with him than with the nervous child. By nervous, I do not mean frightened, but the type of child a good example of which I will describe. A jack-in-the-box would have been a poor comparison. He stood on the seat, knelt on it, in fact did everything apart from sitting still on it, and withal he had such a happy and an affable manner of doing it that it was very difficult to show annoyance with him. Fortunately for me, I was unable to undertake any treatment, as his excitability was such that it affected his general health, and necessitated long periods in bed, and even longer periods of convalescence. Observation of similar characteristics in a future patient would, as a result of this experience, make me very dubious of meting out any treatment except of the simplest and shortest type.

One's observations of the parent should be largely the same as those of the child or patient, and I will not bore you by a recapitulation of them. There is just one point of observation though worthy of mention, and that is as to the degree of help that you are likely to obtain from the parent during the course of treatment. Observe carefully whether the parent is keen or lukewarm on the child's treatment, or is even bored by the fact that the child has to have treatment. Whether he or she is responsive in every way to your ideas for the child's treatment, or in other words, observe whether you have the complete co-operation of the parent: and sometimes it will be, whether you have the complete co-operation of the parent as against the child.

Of course, one could extend these general points of observation almost indefinitely, but I think that I have mentioned quite enough in order to show you that the faculty of observation is one which can be very helpful to us in formulating our line of treatment; and, that orthodontic treatment should be governed by something else than the photographs of the face and models of the jaws—indeed, perhaps, by sitting comfortably back in an arm-chair and gently pondering or reflecting somewhat on the lines that I have laid down in this address.

**DENTITION OF TWINS: ONE, NORMAL OCCLUSION; THE OTHER, CLASS I.\***

By HAROLD CHAPMAN, L.D.S.Eng.

	Case No. 2651, (Fig. 1). F. age 7-8.	Case No. 2652 (Fig. 2). M. age 7-8.
Arches. Occlusion.	Small. Probably will be a Class I case. <div>c     c</div> lost prematurely and naturally.	Exceptionally large for age. Normal.
Height.	4ft. 4 $\frac{1}{4}$ ins.	4ft. 2 $\frac{3}{4}$ ins.
Weight.	4 stone 3 $\frac{1}{2}$ lbs.	3 stone 10 $\frac{1}{2}$ lbs.
Tonsils & Adenoids.	Removed at age 4 years.	Not removed.
Notes.	Has gradually gained in weight since tonsils and adenoids removed: is now heavier than brother, Fig. 2, who was always the heavier.	

Both children have been brought up in exactly the same way.

The interest in these twins as regards their occlusion, is that here are two children brought up in exactly the same way—of course, the personal habits of the individuals may be different—but no information has been vouchsafed which would account for the difference in their occlusion. It might be suggested that the tonsils and adenoids were responsible for the girl's abnormal occlusion and this would presuppose that her occlusion was originally normal, but no one has ever shown a case illustrating such a change though it has many times been stated to occur. The history of three brothers has been published†; all were bad mouth breathers and their tonsils and adenoids were such that they were removed; the occlusion of one was Class I, of another Class II, div. I, and of the third, normal, so that mouth breathing, tonsils and adenoids are not necessarily followed by abnormal occlusion. The profession is, therefore, left to speculate whether the abnormal occlusion of the girl is due to some ante-natal (intra-uterine) or parturient cause.

The writer is indebted to Mr. G. Scott Page, of Tunbridge Wells, for these cases and permission to publish them.

\* Read before the British Society for the Study of Orthodontics, Feb., 1936.

† Chapman, Harold, "Orthodontics: Investigations in Ætiology," *Trans. B.S.S.O.* 1925, p.1. *Dental Record*, 1925, vol. xlv, p. 409.

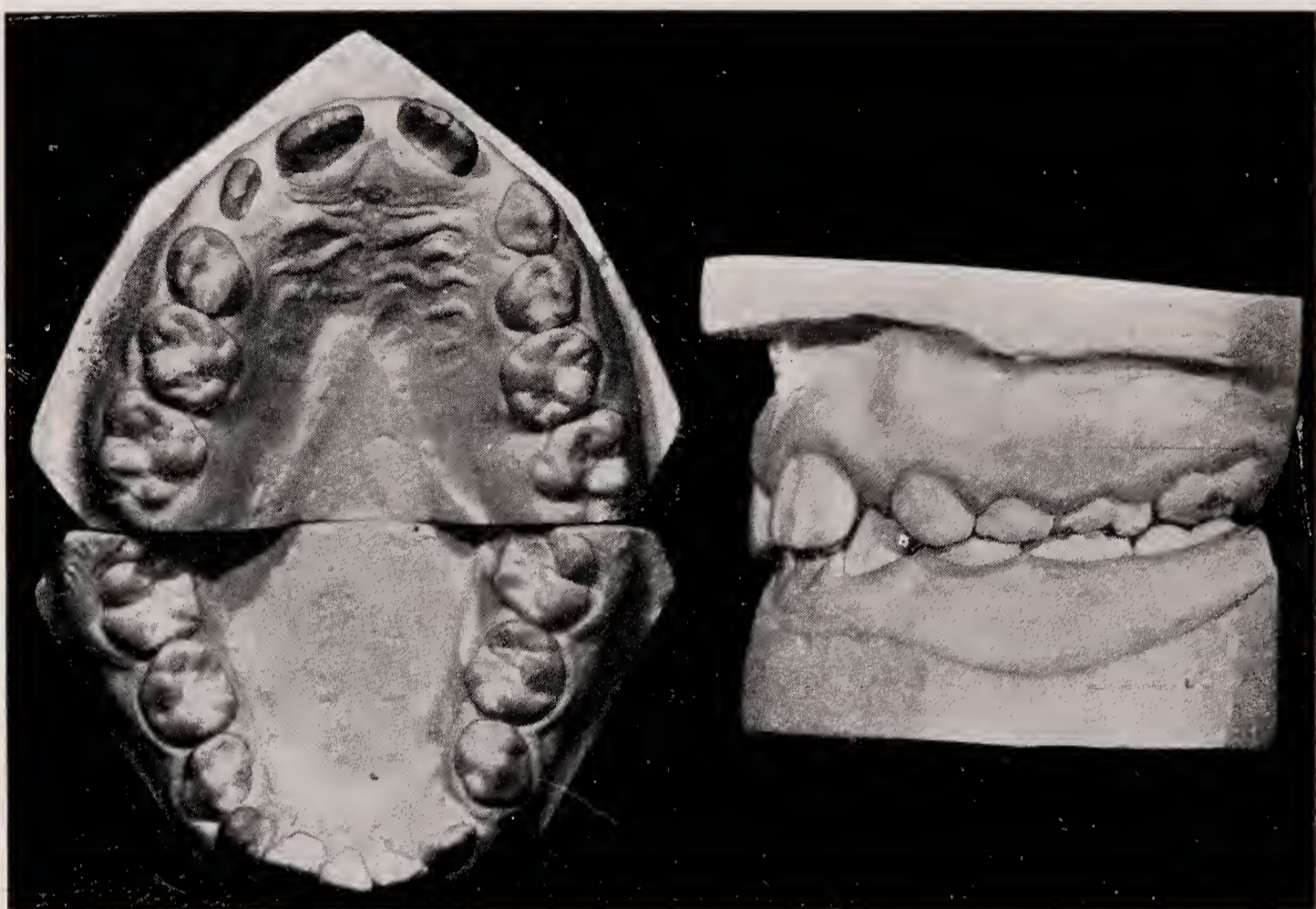


Fig. 1.

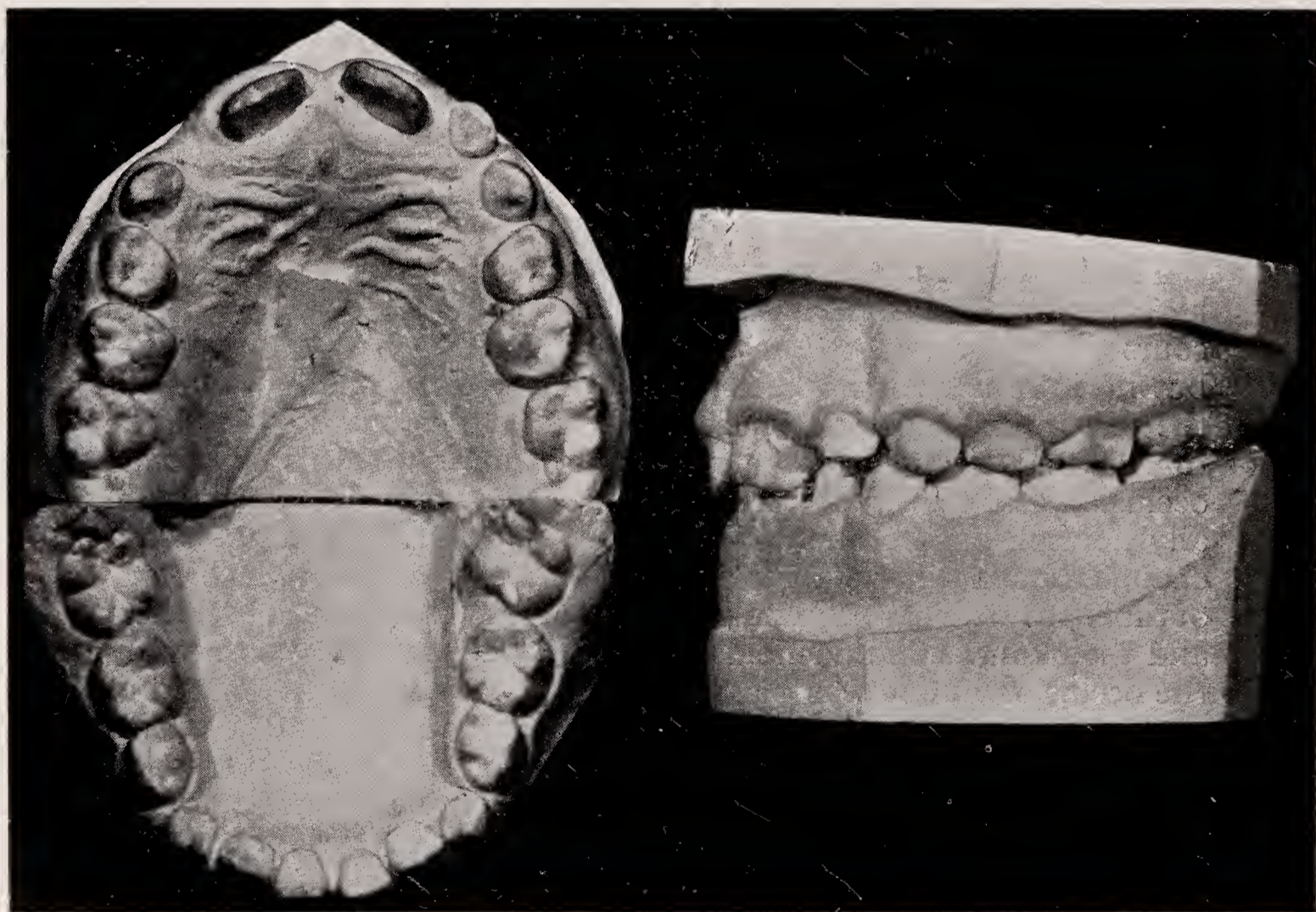


Fig. 2.

## CASE OF IDENTICAL TWINS.\*

By H. C. VISICK, L.D.S.Eng.

SISTERS E. D. and C. D., age 22.—The point of special interest is the space between the left lower premolars in both sisters. This rare condition seems to me one of the most inexplicable of all the irregularities of the teeth. Can any member suggest any possible cause for such a condition?

E. D., at four years of age had all her temporary teeth extracted, and later the left upper canine erupted high up in the sulcus and was extracted.

It is interesting to note the criteria taken by various observers to determine whether twins are identical or fraternal.

Miss Bachrach and Dr. Young are satisfied with three :

- (1) Similarity in sex ;
- (2) Identical pigmentation of hair and iris ;
- (3) Striking facial and physical resemblance.

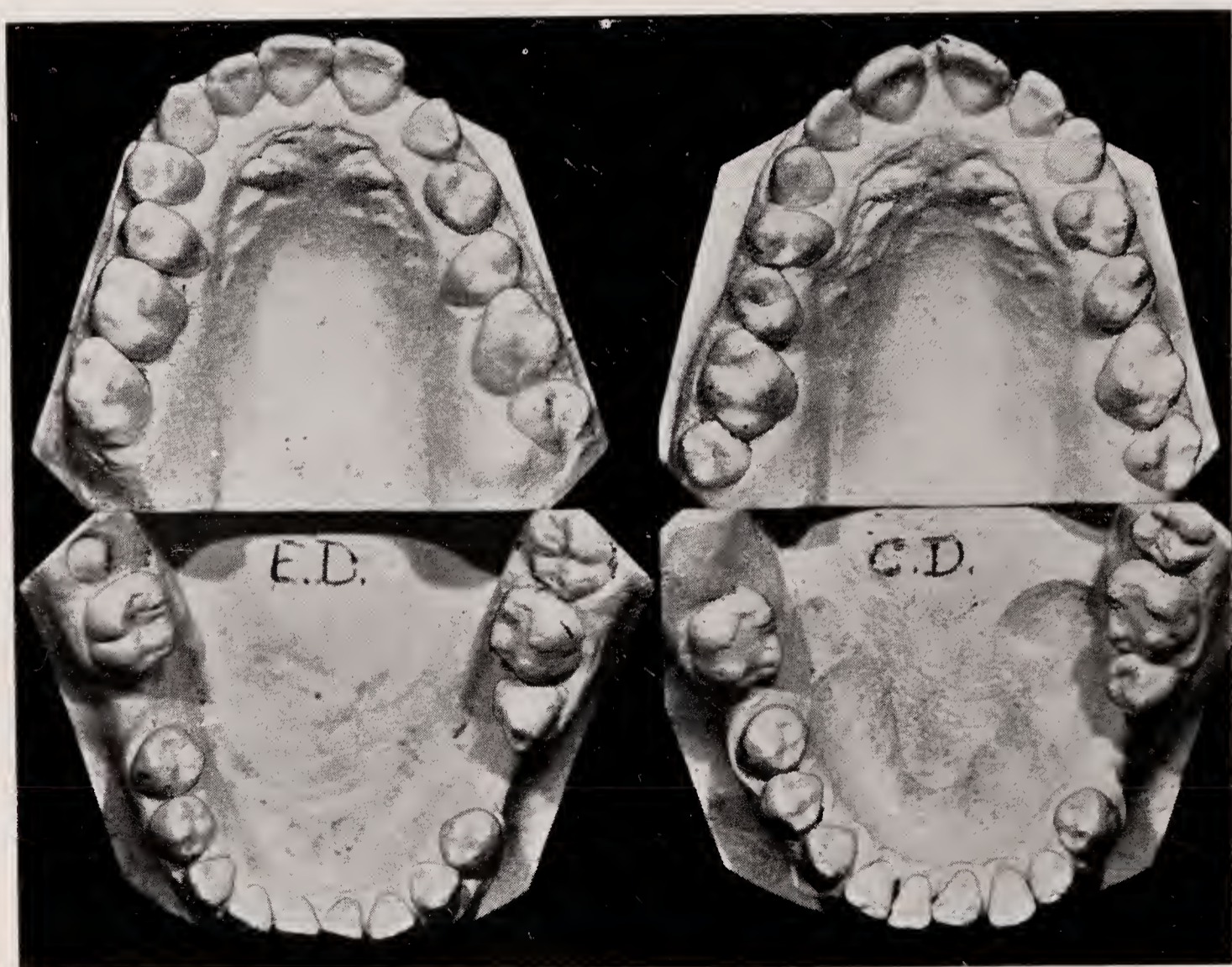
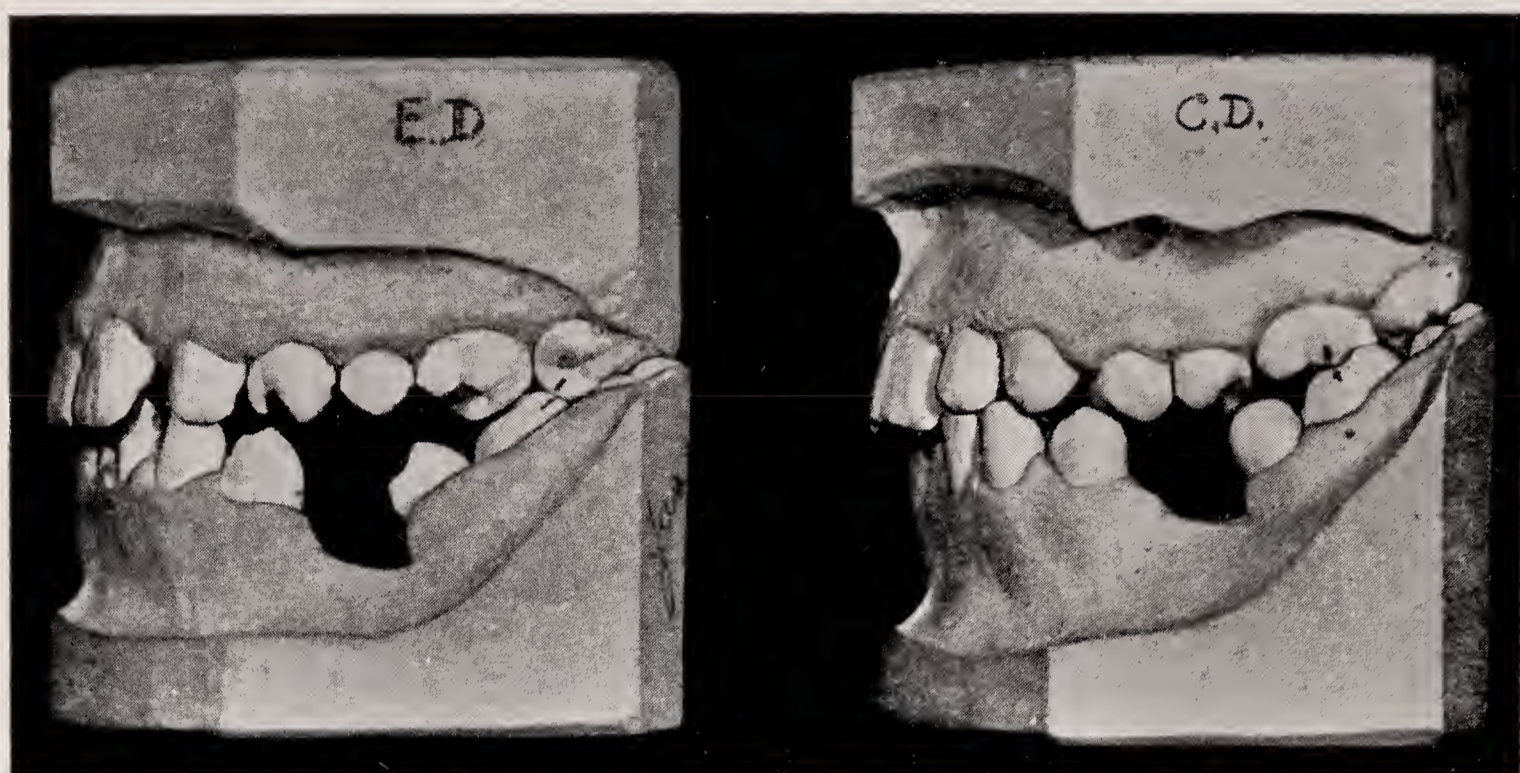
Professor Brash considers the most exact method of identifying duplicate (or identical) twins is the comparison of the finger, palm and sole prints. He also says, "The condition of the occlusion begins to take its place as one of the most important criteria."

Twins who have been classed as identical from other criteria need not necessarily have identical teeth.

Dr. H. B. Wright, in the *International Journal of Orthodontia*, July, 1934, reports a case of cleft palate in one only of identical twins.



\* Read before the British Society for the Study of Orthodontics, Feb , 1936.



## DENTITION OF TWINS.\*

By THOMAS DAGGER, M.R.C.S., L.R.C.P., L.D.S.Eng.

THESE children in feature and colouring show a remarkable resemblance and are presumably uniovular or identical twins. No. 2 is slightly the taller of the pair, which fact usually enables me to distinguish her when they are together.

The models were taken at the age of twelve years six months and generally show great similarity in form and arrangement of the teeth. There is in both twins a similar degree of close bite and delayed eruption of the second pre-molars. X-ray examination proved these to be present.

The important difference is that in No. 1,  $\overline{1} \mid 6$  is in a forward position. Whereas  $\overline{E} \mid \overline{E}$  in No. 2 and  $\overline{E} \mid$  in No. 1 were removed at 11 years 6 months,  $\overline{1} \mid \overline{E}$  in No. 1 was removed at about 9 years 6 months. No reliable information as to the date of loss of  $\overline{D} \mid \overline{D}$  could be obtained in either case.



Fig. 1.

\* Read before the British Society for the Study of Orthodontics, Feb., 1936.

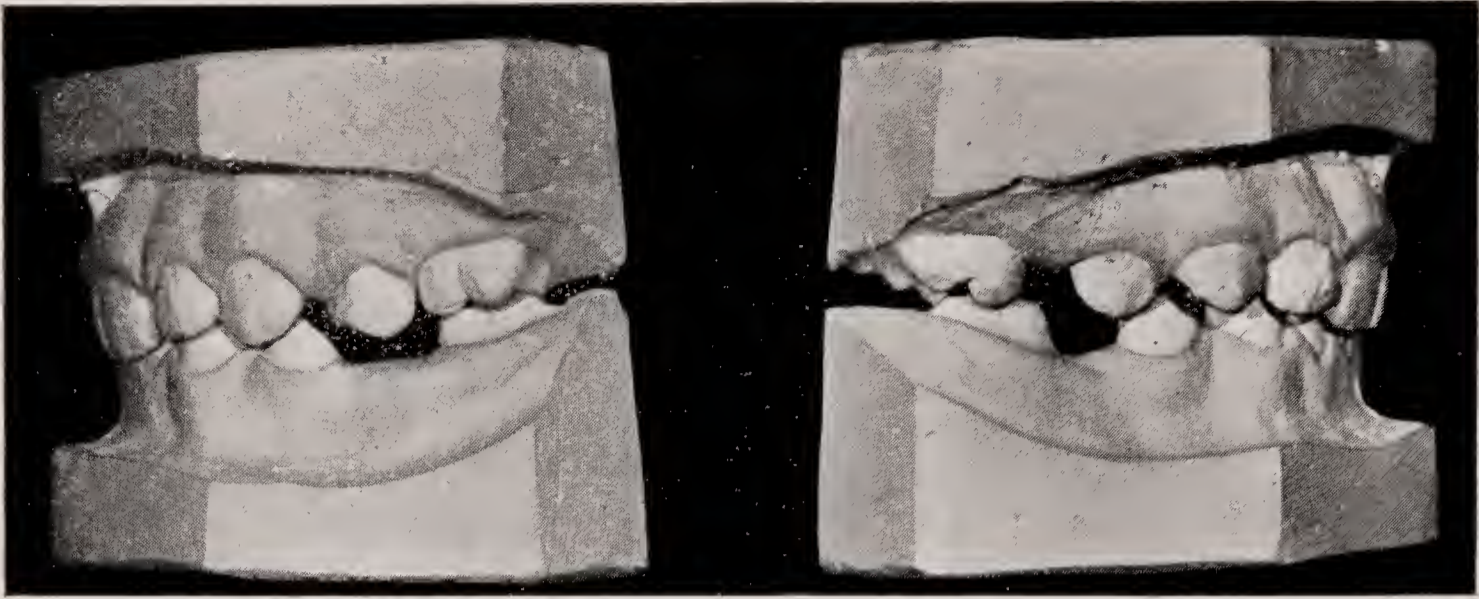


Fig. 1.

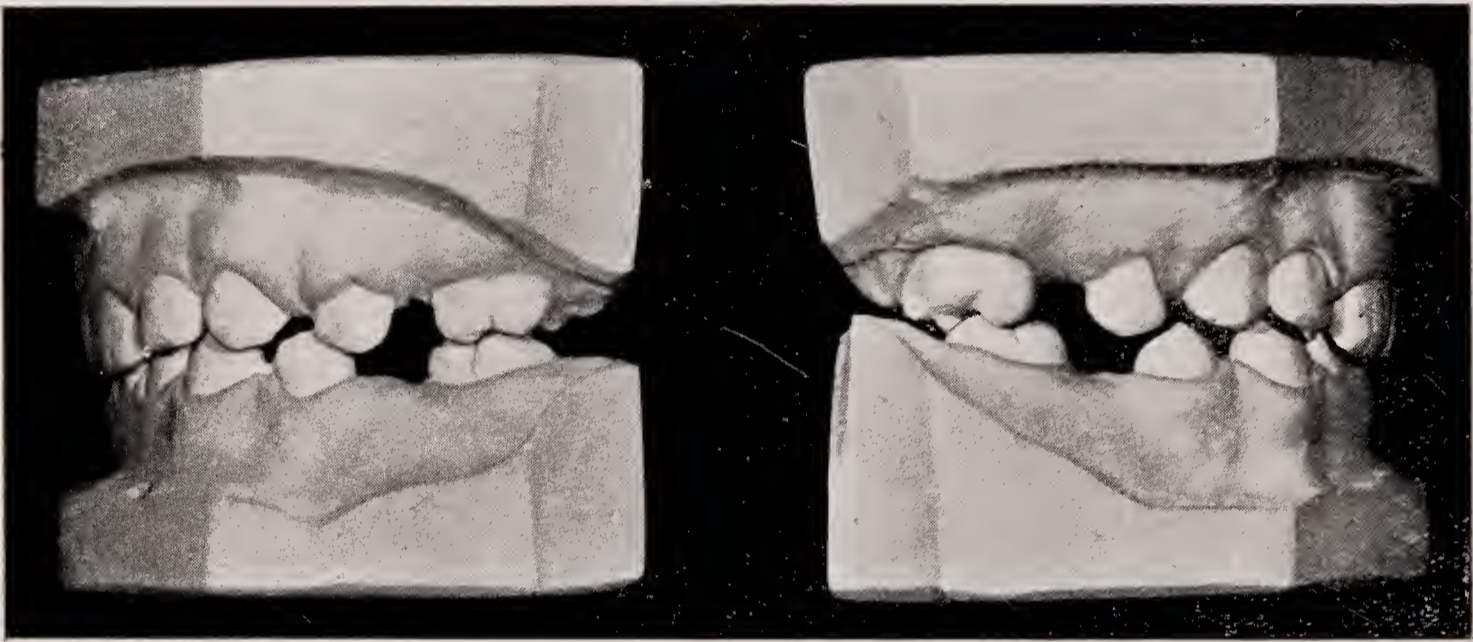


Fig. 2.

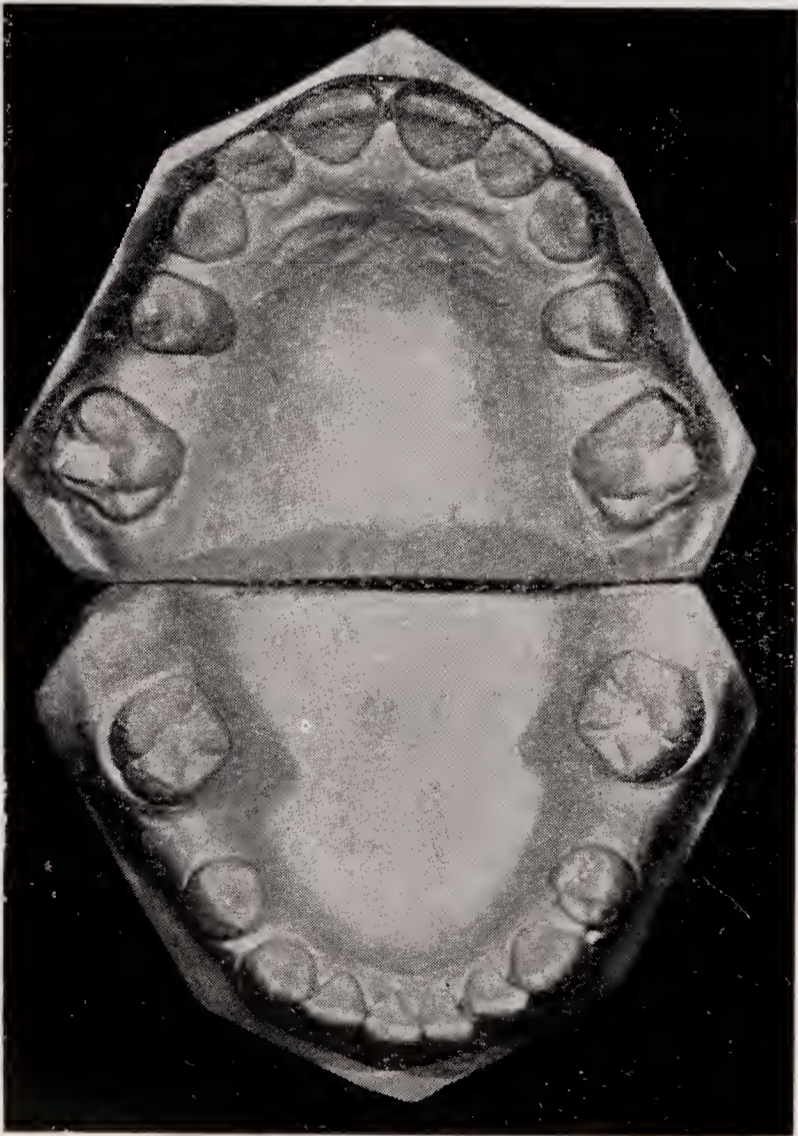


Fig. 2.

## DISCUSSION.

The PRESIDENT said the reports were very interesting and he was especially interested in what Mr. Visick had just said. He had always been very much opposed to the "boosting" of the Canadian quintuplets, but, as a result of the reports which had just been read, he was rapidly coming to the conclusion that a study of the dentition of those children, if they lived, might be of profound interest to orthodontists.

Mr. W. A. BULLEID said there were two points to which he would like to refer. First, he would like to know whether Mr. Chapman could give any information about the dentition of the parents in the case of the twins whose dentitions were dissimilar. The history of the dentition of the parents or the grandparents might throw some light on the condition in the twins. With reference to the case described by Mr. Visick in which there was a space between the two bicuspid, surely the explanation of that was the early loss of the six year old molar. One usually saw the first premolar in contact with the canine and the second in contact with the remaining molar in the series. He had seen a second premolar in contact with the wisdom tooth, the other molars having been lost. He thought that was not very unusual.

Mr. BERTRAM SAMUEL said he had found it interesting to try to find where the resemblance ceased and the differences occurred in the many sets of identical twins that he had seen. He remembered that many years ago at Great Ormond Street Hospital it was noticed that, however much identical twins resembled one another, there was always a difference in the external ear, and it became a matter of routine to turn the children sideways and examine their external ears.

Dr. G. NORTHCROFT said he did not think that the so-called identical twins that had been described that evening proved their identity in their dentitions. With regard to the case shown by Mr. Visick, the difference in the positions of the left maxillary canines showed a very marked difference in the bony development of the left maxilla in the two cases. Mr. Visick had referred to the inscrutable problem of why a second premolar should travel back and touch the second molar, which had happened in both his cases. He had said that one of the twins, E.D., had lost all her deciduous teeth, but people sometimes said that, without being quite sure or remembering perhaps that one or two teeth had been left. The usual explanation of why a second premolar erupted next to the second molar after the first permanent molar had been removed was that the E remained in place, the posterior root being first absorbed and the second premolar erupted towards the back, into the space from which the first molar had been removed; and the root forming afterwards had remained upright, as shown in X-ray photographs of such cases. He suggested it was possible that the majority of E.D.'s deciduous teeth had been removed but the lower E's had probably remained.

Mrs. LINDSAY said she might be mistaken but she thought that in the case of C. D., the temporary canine on the left was in. Dr. Grunberg, who had been working on the subject of the absence of permanent canines, considered that it had something to do with the growth of the bone in the region of the canine and when a canine was impacted in the palate it was another stage of absence of the canine. She would like to ask Mr. Visick whether he had taken an X-ray photograph of the other sister to see whether the permanent canine was there. An interesting point with regard to the extraction of all the temporary teeth seemed to be proved in the occlusion of E.D. The upper alveolus

had not grown down. If the upper teeth had been left in, according to Oppenheimer the alveolus would have done so.

Mr. HAROLD CHAPMAN said he had hesitated to show his case for fear he would be asked the question which Mr. Bulleid had asked him ! Some years ago the Society published a questionnaire on the subject, but only one member had filled one up, and when he was writing the notes on the case he had shown that evening he hoped everyone would forget the matter, because he himself had overlooked it. Consequently he had no further information to give than that which he had already given, but he would see whether the models of the parents could be obtained ; he had already written to the mother twice. Mr. Scott Page, whose patients the children were, said the father was of poor physique and had only a few teeth left ; the mother appeared to have a very good occlusion.

Mr. H. C. VISICK, in reply to the discussion, said he was not quite clear whether Dr. Northcroft disputed that the case he had shown was one of identical twins because their dentitions were not absolutely alike. As far as he could gather, most people did not look at the teeth at all in deciding whether twins were identical or not ; they judged by similarity in appearance and sex. He thought it was only Professor Brash who said that the question of the occlusion of the teeth was coming to be used as a means of determining whether twins were duplicate or identical. With reference to Dr. Northcroft's suggestion that the 5's had travelled back because the E had been left in place after the extraction of the 6, he himself did not feel this was a convincing argument. The developing 5 was almost embraced by the two roots of the E, and he could not imagine how it could slip out from under the E to get into the socket of the extracted 6. That there could be a big variation in the teeth of identical twins had been shown by Dr. Wright, who reported a case of cleft palate in one twin of a pair that he otherwise considered to be identical. Mr. Bulleid had said that he thought the space between the 4 and the 5 was due to the loss of the 6, but there again he did not feel convinced, because he had seen thousands of cases in which the 6 had been lost at various ages and he could remember only three cases in which he had seen such a large space between the premolars in the lower jaw, the roots being even wider apart than the crowns. The crowns seemed to be tipping towards each other and the roots were further apart. The twins whose case he had described were not patients of his ; he had simply taken the impressions. He could not be sure that E.D. had had all her temporary teeth extracted, but her mother had told him that that was so. In reply to Mrs. Lindsay's question, there were no temporary teeth present in either case. With regard to Mr. Samuel's remark as to a difference in the external ears of identical twins, one authority said that if there was a greater variation between the right ears of the two twins than there was between the right and the left ears the twins were not identical.

## A CASE OF LINGUAL OCCLUSION.\*

By WILTON THEW, L.D.S.Eng.

I HAVE brought here a few slides and a few notes about a case which presented one or two peculiarities; at all events, they appeared to me to be peculiarities, and I thought the case might be of interest to the members.

Fig. 1 is the slide of a child in lingual occlusion on one side. The difficulty in these cases is that they are rather difficult to expand. A child with unilateral occlusion I personally have always treated in the very simplest way, putting in a Badcock expansion plate with a flange on one side. I take the models, put the case on an articulator with the centres correct, and then make a Badcock expansion plate with a flange upon the correct side,

About January of last year a little girl of seven years of age was brought to see me. She had a history of thumb-sucking, nasal obstruction and mouth-breathing, and she was biting in the way shown in Fig. 1. I took two models and decided to expand the upper jaw first. I placed the models in the middle line, that is to say, so that the central division was correct in both jaws, set them up on a plane line articulator, and made an ordinary Badcock plate with a flange, so as to hold the jaws in what was to the child then an extremely uncomfortable position. (The child came up a long way from the country.) I put the plate in and found to my horror that the flange was on the wrong side. There was no question about it at all. It is a fact that in this and the following slide the perfection of the articulation on the lingual occlusion side is a great deal better than was shown in the films. The only thing I could do was to say that I was very sorry, that my memory had broken down and that I should have to re-make the plate with the flange on the right side.

Just before the child went out of the room I told her to close, and she gave me this (Fig. 2). Again please believe me when I say that she had a perfectly normal bite on the side which was the lingual occlusion side, and the bite was in lingual occlusion on the other side. That was a case which had not come my way before, but perhaps other members have seen a case. I have seen a child with a beautiful occlusion on the lingual occlusion side, and in the



Fig. 1.



Fig. 2.

\* *Transactions of British Society for the Study of Orthodontics*, March, 1936.

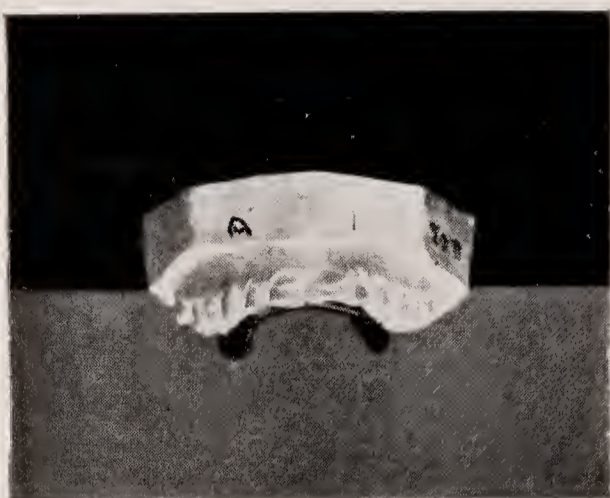


Fig. 3.

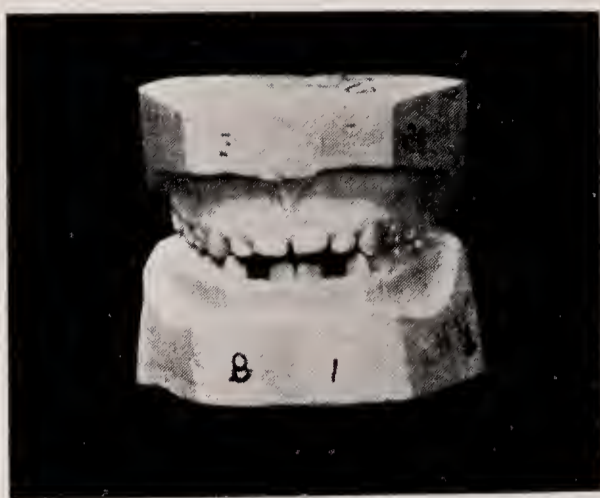


Fig. 4.

case of a boy I have sometimes been tempted to leave it alone, as it was perfect functionally, but a child with a perfect lingual occlusion on either side, which ever she liked, and who had not the faintest notion on which side she was biting, was a novelty to me. I had not made such a blunder with the first plate as I had thought, except that I had assumed that the bite which the child gave me on the first occasion was the correct one.

I decided to give her two flanges, one on each side, so I made a plate with a flange on each side, as shown in Fig. 3. The advantage of such a plate was that the child could bite together; there was no capping of the teeth. With this plate in position she could not wander from the central position, and with that single Badcock plate both jaws were expanded.

If I brought the flanges close up against the teeth and expanded, I should quite obviously expand both jaws, but I should be perpetuating a cusp to cusp position. Therefore from time to time I have cut away a little bit of this flange as expansion has gone on, thereby allowing the upper to go in front of the lower. One might think this was an extraordinarily uncomfortable thing to wear, but that was not the case. The flanges must be made so large that the child does not want to bite on the top of them.

Fig. 4 shows the case as it was in May of last year, with the centre straight. The child has no disposition to bite to the side; in fact she cannot do so. The jaw appears to have accommodated itself to the central position very quickly. These are the last models I have taken. Owing to the parts of the upper flanges having been cut away to allow the upper to go a little faster than the lower, the child's uppers are now well over the lowers. The amount of expansion in the upper jaw when I measured it in May was  $\frac{3}{16}$  in. in the upper jaw and just under  $\frac{1}{8}$  in. in the lower jaw. The expansion is going on very slowly at the present moment, but the child cannot go sideways in either direction.

#### DISCUSSION.

The PRESIDENT said that Mr. Thew had contributed a very interesting short Communication and was to be congratulated on the ingenuity of his apparatus. There were two questions he would like to ask. First, he would like to know how far the flange extended forward, and,

secondly, had Mr. Thew found any irritation of the gingival margin in the lower jaw from contact with the edges of the flange? It seemed to him that if the child did attempt to bite sideways at all, those edges might come into contact at that particular point.

Mr. B. SAMUEL said he was particularly interested in Mr. Thew's Communication because it helped him in a point he had been trying to make for years, i.e., that most cases of unilateral malocclusion were brought about by a child swinging over in early life so as to obtain a bite of convenience. One always had a guide if the centre was out, but it appeared that in the case Mr. Thew had described the child for some reason—possibly the canines being too close together—was not able to bite in the way nature intended and swung over first to the right and then to the left.

Mr. NORMAN GRAY said he had had a case of a rather similar nature to that described by Mr. Thew. It was the case of a boy who could do the same as the child in Mr. Thew's case, but he had a preference for one side. Acting on that, he made a lingual arch with a spring on one side, but he found out that the boy always slept on his closed fist, and it occurred to him at the time that that might have had something to do with the malocclusion. He asked the child's mother to go into the room and pull his hand away. The child was now at a boarding school and the malocclusion had been corrected in about a term. He had used a stainless steel arch with the locking device returning back parallel to the spring.

Mr. ROBERT CUTLER said that the last set of models shown by Mr. Thew was particularly interesting, in showing that there had been obviously a large measure of opening of the bite, which in the case in question was no doubt very beneficial. That might not always be so, however. If one had a case of unilateral lingual occlusion with close bite, the restitution of the lingual occlusion was in every way beneficial, but if one had a case which at the commencement of treatment had an incisor bite, that was edge to edge, one ran a fair risk of ending up with a permanently open bite. His ears still burned at the thought of a case of unilateral lingual occlusion which he had treated about a year ago, in which the bite was edge to edge. He had treated it very much on the lines described by Mr. Thew; he had corrected the lingual occlusion, but ended up with a very real open bite! He thought that there were two distinct types of unilateral lingual occlusion. In one type there was obvious facial asymmetry, and such cases were often very tiresome to treat. In the other type the facial symmetry was normal, the lingual occlusion appeared to be fortuitous, and the treatment of it could be conducted with a fair prospect of success on orthodox lines.

Mr. CHAPMAN congratulated Mr. Thew on his very ingenious method of obtaining expansion of the lower arch by means of flanges on the upper plate. He had been wondering whether, if one attempted to get rapid expansion of the upper, one might not get distal movement of the lower jaw instead of expansion of the lower. Perhaps that was a point that should be borne in mind. Slow expansion, he thought, was very essential. He remembered that many years ago he had shown a case similar to Mr. Thew's; it was not a case of his own but a case of another practitioner. He could not remember what the treatment had been, but he knew that at that time he used to try to think out elaborate methods, until one member of the Society suggested that whilst the lingual occlusion was unilateral, that unilateralness was only due to a deviation of the mandible to one side or the other to permit of the interdigitation of the cusps. The treatment suggested then, which he had adopted since that time, was simply to expand the upper

jaw as if it were an ordinary expansion, and one got an expansion on both sides, but at the same time there was a movement of the mandible to one side or the other, and the case corrected itself in a very simple manner. Nevertheless, he congratulated Mr. Thew on his method, which he thought had some very valuable points.

Mr. WILTON THEW, in replying to the discussion, said the President had asked how far forward the flange went. He was sorry he could not remember exactly, but he thought it went as far forward as the first temporary molar. He would be able to give the information before very long, as he would see the patient. With regard to irritation of the gingival margin, if the flange was pyramidal in cross-section it would touch at the top of the lower teeth and not at the gingival margin at all. The inner upper edge of the occlusal surface of the molar teeth would slide up the flange. Incidentally, that sliding up the flange, he thought, ground the flange away to some extent, and he found it unnecessary to take very much of the flange away during the process of allowing the upper jaw to overrun the lower. Mr. Samuel had spoken about the position being one of accommodation, due to the canines getting in the way. He thought that was very probably right, because when he set the case up on the articulator the canines were the only things that met, but the child soon got over that. He thought Mr. Gray's suggestion as to the cause of the condition was exceedingly interesting and it was quite new to him. He would bear it in mind and would find out in future whether the children were in the habit of sleeping on their fists on one side or the other. He did not know whether the child whose case he had described was accustomed to sleep first on one fist and then on the other. With regard to Mr. Cutler's remarks as to open bite, the child in question was a voracious thumb-sucker, but the open bite was greater than the slide showed. He hoped that now that the cusps were over and no longer tip to tip the bite had collapsed a little and that the open bite was not too open at the front. He could only cite as an example another unilateral case which finished up with a fairly bad open bite which corrected itself, because he had the nose attended to. Mr. Chapman had spoken about rapid *versus* slow expansion. He had been particularly careful in the case in question to do the expansion slowly. He thought that was very desirable in such a case, and he always carried out the expansion slowly when that was possible. Mr. Chapman said that he treated cases of the kind in question by simple expansion of the upper jaw, and then, as he understood it, the jaw settled into its proper occlusion at the most convenient place. He himself had started treating a case in that way, before he began to put on flanges, but the child got a very extraordinary bite, not related to anything normal at all, so he clapped on a flange quickly.

## MALOCCLUSION IN ANIMALS.\*

By ROBERT BRADLAW, M.R.C.S., L.R.C.P., L.D.S.Eng.

MALOCCLUSION and anomalies in size, shape, number, structure and position of teeth are not at all uncommon in wild and domestic animals. I believe that a study of these cases would assist us in solving many problems in orthodontic ætiology. For a comprehensive survey of the subject I refer you to that magnificent paper by Professor W. C. M'Intosh, entitled, "On Abnormal Teeth in certain Mammals especially in the Rabbit," in the *Transactions of the Royal Society of Edinburgh* (Vol. XLVI).

I am indebted to the museum committee of the Royal Dental Hospital for permission to show you the following two cases. The first is that of a pine marten (Illustration I) an animal once common in this country. It does not conform to the usual dental formula of  $1 \frac{3}{3} C \frac{1}{1} P \frac{4}{4} M \frac{1}{2}$ , as there are two additional lower incisors. These may be retained deciduous teeth but they have not this appearance. Another feature is the crowding of the incisors and impaction of the left upper central. The jaws of this chick (Illustration II) show marked dis-proportion, the lower being much larger than the upper. The next two specimens both of which are figured in Professor M'Intosh's paper have been very kindly lent to me by Dr. Gordon Campbell of Dundee. The first is the mandible of an ox about five years old with a congenital deformity (Illustration III). The central incisors are in torsion and so placed that their posterior surfaces face each other, but are more normal in form than their fellows. The last specimen, a rabbit, shows the typical deformity of the incisors (Illustration IV). The upper incisors are assymmetrical and curving down the throat.

### DISCUSSION.

The PRESIDENT said that Mr. Bradlaw's Communication was a most interesting one. He would be glad if any members who were particularly interested in the comparative anatomy side of orthodontics would discuss the Communication.



Fig. I.

\* Read before the British Society for the Study of Orthodontics, Jan., 1936.



Fig. II.

Failure of growth in jaws and cranium of a chick.



Fig. III.



Fig. IV.

Dr. G. NORTHCROFT congratulated Mr. Bradlaw on his Communication. The subject with which it dealt was one to which Sir Frank Colyer had frequently drawn attention, and there were many specimens of abnormalities in the animal kingdom on exhibition in the museum of the Royal College of Surgeons. Personally he agreed with Mr. Bradlaw that the more orthodontists studied such pathological specimens among animals the nearer they would probably get to discovering the secrets of the ætiology of human anomalies. It would be very useful to have a series of photographic reproductions of such specimens kept by the Society.

Mrs. LINDSAY said she was rather surprised that Mr. Bradlaw had not mentioned the name of Sir Frank Colyer, who was the principal exponent of the abnormalities in question. As perhaps some of the members knew, Sir Frank Colyer was writing a book which would be published in April, and she thought that every member of the Society ought to purchase a copy of it. It would be a most comprehensive account of all such abnormalities, and it would deal with a very large number of specimens, both wild and captive, collected over about thirty years. One of the conclusions to which Sir Frank had come was that abnormalities which appeared in the wild animal were very much emphasised and increased when the same species was in captivity. He suggested that when there was an aberration it had a tendency to variation in the species. The bones of the skull seemed to alter at the same time as the appearance of abnormalities. The subject was a most fascinating one, and she was sure that every orthodontist who was worthy the name would be most interested in Sir Frank's book and should study it carefully. It would probably reveal to them the answers to some of their puzzles.

Mr. R. BRADLAW, in reply, said he had not mentioned Sir Frank Colyer's name because he thought it was quite unnecessary to do so in connection with investigations into pathological and orthodontic irregularity in animals, Sir Frank's work on that subject being so well known to members of the Society. He had not mentioned that Sir Frank was writing a book because he had not been aware of that fact.

## SOME CONTROVERSIAL PROBLEMS.\*

By L. RUSSELL MARSH, L.D.S.Eng.

IF the path of the dentist in general practice is difficult and thorny, that of the orthodontist is far worse. Surely the poor misguided wretch who trebles his worries and difficulties by attempting to practise both, ought to be in a nice comfortable home with padded walls and with massive male nurses to look after him. Perhaps that is why an orthodontist is, next to the professional humorist, the saddest being in the world. You can recognise him at a distance by his dejected air, his forlorn bearing, the hopeless droop of his shoulders, and by the fact that he never smiles. He looks like Atlas carrying all the cares of the world upon his back, and indeed he is, but without Atlas's strength to support them. Colonel Howkins, in his recent presidential address to the Odontological section of the Royal Society of Medicine, spoke of the chances of life of the dental surgeon. He did not, perhaps fortunately, give any statistics regarding orthodontists. I feel that if an orthodontist lives to a great age it is sheer absent-mindedness, that he just goes on living mechanically—too preoccupied to notice it, or perhaps because he still has an enormous number of unfinished cases on his hands. That he has not already succumbed to cirrhosis of the liver—which, it appears, is the commonest fatal complaint among dentists—is nothing short of a miracle.

I am sure we are all agreed that the orthodontist has sufficient anxious responsibility to account for his solemn appearance, and I would humbly suggest that if we took sufficient care to exclude any prospective member who does not look the part, at least until he has acquired the correct general appearance, we could delay the possible degeneration of this august body into something almost human.

One of the solemn thoughts which must engage our minds when they are not occupied with the effects of toffee on fixed appliances is the possible realisation of our ideals. Suppose for one moment that all cases of abnormality in the world had already been treated with complete success. What a dreadful thought; we should all look alike—as policemen do. With further advances in the art of making-up, our womenfolk would be quite indistinguishable. This would be most confusing, and might lead to all sorts of difficulties. Perhaps it would be wiser not to pursue this train of thought any further.

Has it ever occurred to you to wonder where Jack Hulbert would be without his chin, or Leslie Henson with one? They would both retain their attractive and amusing personalities, but there would be something missing. If I were either, I would insure heavily against orthodontic treatment. And what about Ronald Squire with his superior protrusion, and that delightfully wicked smile and the individual tricks of expression and speech which go with them. I could mention a host of other prominent people if I were willing to risk a libel action. These men have had the wit to make full use—even if unconsciously—of an abnormality which we regard as a

\* Read before the Society, March, 1936.

handicap, and should, without hesitation if consulted in their boyhood, have corrected with enthusiasm and pride.

This is only a passing thought. Do not let it worry you too seriously. Even if we could compel all abnormals to accept treatment the chance of our producing 100 per cent. successes is sufficiently remote.

#### PERSONAL EQUATION.

This term, used I believe in mathematics to account for a variable and unavoidable margin of error, has an application to a greater degree in all less exact sciences. It is a factor which cannot be neglected in orthodontics.

It is perhaps fortunate that in everyday life we are not continually aware of one of our greatest handicaps—that is, the ultimate remoteness of social intercourse, the difficulty of expressing in mere words what we wish to convey, the “Tower of Babel” in which we all live and attempt to exchange ideas. We appear to be in complete agreement with another, and we do not even know if we are “talking the same language.” We cannot get inside the other fellow’s mind—even if he wants us to, and very often he doesn’t!

If this is true of ordinary social intercourse, it is far more so where it concerns a group of scientists who, with little or no personal knowledge of each other, meet together to pool their ideas and their experiences. You have only to read a paper and to listen to a discussion afterwards in order to appreciate the inarticulateness of words, and the difficulty of conveying ideas through that medium—the chief medium at our disposal—and the fundamental differences of viewpoint which can never be dissembled by words.

A. F. Jackson has emphasised how important it is to understand that each patient is an individual needing separate individual treatment, that you cannot classify and group individuals, and that classification should be used only as a method of intercourse between orthodontists and as a basis for teaching.

I would call attention also to the individuality of the operator—that “personal equation” which makes it so difficult for us to commune together for the furtherance of the science of orthodontics. The judgment of the orthodontist is influenced by his own individual outlook, his knowledge, the sum total of his experience, his personal technical ability, his prejudices, his conception of beauty and even his conception of the normal. I would call this the personal equation of the operator. Add to this the individuality of the patient—the fact that no individual conforms exactly to any classification, and it is not surprising that opinions may differ widely as to the treatment of any given case. Neither is it surprising that there is something about an orthodontist’s individual work which he can never quite pass on, however sincerely he may wish to teach his methods.

#### EDUCATION AND TREATMENT OF THE MASSES.

I have referred before to the problem of the orthodontic treatment of the masses. At first glance it would appear to be insoluble. In spite of the introduction of stainless steel, the problem of cost as

related to time is still a considerable difficulty. But that is no reason why the matter should be shelved. To begin with, are we approaching it from the right angle? For that matter, are we approaching it at all? Some of these apparently insoluble problems are apt to work out in a surprising fashion when approached indirectly. Let us examine the position in America. In proportion to the number of people, and particularly in proportion to the numbers of those people requiring treatment, in proportion to the amount and distribution of wealth in the two countries—in any proportion you like to take—there are far more cases treated there than here. The reason is not wealth—I cannot believe that apart from the boom period there are proportionately more people who earn livable incomes—but education. Our people are pitifully ignorant of matters orthodontic. Who instructs them? The dental practitioner. And who instructs him? No one. As the only orthodontic body in this country it would appear to be our responsibility. We may say that he has a standing open invitation to come to our meetings whenever he pleases. That is no answer. We could not help him if he came. On the whole our work is far above his head and only confirms his belief that this is an obscure science which is only intelligible to the few who devote their lives to it, and that those few have bees in their bonnets anyhow.

I expect you all know the history of the Imperial Tobacco Company of India. They taught the Indian native to smoke. I will not pretend that their motive was entirely altruistic. They may have thought it was good for him to smoke—it was certainly good for the Imperial Tobacco Company. Did they teach him by introducing 2s. 6d. cigars into the country? They did not. They taught him by introducing a cigarette that was so cheap as to be well within his means—so cheap that it occasioned them considerable loss. He learned to smoke and, beginning to acquire discrimination, demanded something better. Something a little better was supplied and gradually his taste improved until today I am told that it is astounding the millions of comparatively poor people who manage to smoke what are for them expensive cigarettes—Players and Gold Flake and such.

This may appear to be an unfortunate parable in that it is an example of good business. Our motives are on a much higher plane. We do not want to get rich as a result of our efforts, do we now? Or do we? Anyhow I must ask you to exclude that aspect from the comparison. The question we are considering is education, not finance. The Imperial Tobacco Company did not say we cannot sell tobacco in India because the native palate is so unappreciative and his means so slender that he will smoke only the cheapest, which is no good to him or to us. They said let us let him in on the ground floor and he will soon be using the elevator—he will learn to appreciate and demand the best. Let us give him what is now acceptable and allow his progressive development to do the rest.

We are a company who at present have only the best cigars (I hope!) and we wonder why they make people sick. Why not give them cigarettes at a loss—the loss will be in the time and effort expended with no appreciable result. Our American colleagues

with their delightful candour tell us that "we don't know how to sell our stuff." We don't, and if we did we are trying to sell cigars to a nation of non-smokers.

Before we teach the public to smoke we have got to be sure that we have the personnel, the agents and all the paraphernalia of distribution in working order. At the moment there are not enough dentists who take a special interest in orthodontics to deal with any considerable increase in the demand for treatment. So our first care should be for the organisation.

A question which might with some justice be asked is this: Is the B.S.S.O. a society of experts whose object is the advancement of the science of orthodontics, or is it a post-graduate school for young orthodontists? In the absence of any other it has to fulfil both offices. This is the only association in this country where men have the opportunity to meet and to discuss orthodontic problems. Our position puts upon us a very heavy responsibility.

I would suggest, Sir, that we begin by making a junior section of this society. It would devote its evenings to papers, demonstrations and discussions on ordinary everyday orthodontics, with no special leaning towards research and advanced papers, which would remain the province of the senior section. At such meetings members would feel no such embarrassment in bringing forward their minor troubles as they would here, and the lay dentist would not feel so diffident at attending. Visitors should be constantly encouraged, the main principle being the education of the practising dentist. Members of either section should be free to attend all meetings. I would like to see small branches started all over the country and all over London, to which anyone with any interest in orthodontics might be admitted as members and encouraged to bring friends. These meetings should be as informal as possible. It would not matter if there were only one orthodontist member of each branch. Any apparently insuperable difficulties might be referred to the larger central body where more numerous opinions would be forthcoming.

In London, where mileage is no great problem, I would suggest starting with a few local branches, and subdividing those branches as they become too large, in order to retain their private and homely character.

There is no doubt in my mind that sceptical as he may pretend to be, and critical as he undoubtedly is of our work, the honest practising dentist is genuinely worried about the orthodontic problem. He cannot disregard it. It continually crops up in his practice. I feel sure that if we started such branches for informal talks and advertised them in the correct way we should be surprised at the attendance we should get after a time. You may say that this sort of thing will do a lot of harm—that men who are not qualified by teaching and experience will attempt treatments which they cannot carry through. They are doing that now, and with no help or guidance to prevent them from innocently committing orthodontic crimes, unable to compare notes even with their equals in knowledge or to benefit by the experience of others. Don't you feel, Gentlemen, that the responsibility is with us who know some-

thing about it, with us who constitute this society, and therefore with this society itself.

There is another point of view. This thing which I am discussing will arise, it is bound to, in the future, unless something happens to render the practice of orthodontics obsolete. This problem of the orthodontic treatment of the masses is very real and is growing. It will be dealt with, and it would be a pity if this society had no hand in the dealing.

#### EXTRACTIONS.

I wonder what impression this society makes upon the mind of the new member. I wonder whether we teach him anything or whether we just add to his confusion. In the early days of my membership Angle's teachings held sway. Although Angle's views were never accepted in this country in their entirety, there was a feeling (well merited we will all agree) that he was the "Rolls Royce" of orthodontics. Consequently methods of treatment by extraction were not very much discussed and were referred to apologetically. I think that none of us felt quite sure that it was not our own lack of skill which caused Angle's methods in our hands at times to go wrong. That is and always will be one of the tragedies of orthodontics. We can never be certain which of many factors causes the failure or partial failure of a case, and one of those factors is our own ability and judgment. Perhaps that is why we are so reserved about those cases which have not worked out according to plan.

Since then there has been a change of thought. Recently it has become generally accepted even in his own country that Angle's doctrine went too far, and some modification of his teaching has inevitably resulted. It becomes increasingly apparent that his extreme methods are even less applicable here, where caries of both dentitions and early loss of the deciduous teeth add to the complications of our work, than elsewhere. There is therefore no longer any reticence on the question of extractions. There is—may I strike a note of warning—a grave danger that the pendulum is swinging too far the other way. This danger does not affect the men who have lived through these difficult phases, but it does concern the new man who comes here and listens to our discussions. He is liable to get an altogether wrong impression of our work. It is for this reason and with no further apology that I propose to attempt to clarify this very vexed problem.

The dangerous aspect of the whole question of extractions is that it often appears easier to remove teeth than to treat by purely conservative methods. When you have extracted a tooth all the King's Horses and all the King's Men cannot put that tooth back again. I have said before and it cannot be overemphasised that cases in which alternative treatments are possible are rare. It is a misconception that most cases treated, for instance, by intermaxillary traction could, with advantage in time and expense, have been treated with a reasonable result by removing teeth.

I have heard it stated and inferred repeatedly that the removal of teeth in orthodontic cases tends to solve the wisdom tooth

problem, and for some time I have been itching to lay this ghost once and for all.

Let us consider the Class II case in this respect. We should not presumably hope to help the case by removing lower teeth. The space obtained by removing, say, the upper first premolars is required for backward movement of the anterior teeth and so is not available for the third molars. If a little of this space does benefit the back of the mouth, as it often does, in spite of the operator's strenuous efforts to the contrary, the benefit is small, and affects only the upper wisdom teeth. Impacted upper wisdom teeth very rarely cause concern, as their removal is seldom one of great difficulty. How is the lower third molar affected? We rarely remove a tooth in the mandible for orthodontic purposes at all, and certainly extremely rarely in a Class II case. Then the lower wisdom tooth is not relieved at all. On the contrary, if anything, the extraction of upper teeth and the retraction of the incisors and canines will tend to inhibit the forward growth of the lower alveolus, particularly if an upper external appliance and later a retention plate are worn for a considerable period. Furthermore, if the alternative line of treatment be undertaken, that is, an attempt is made to move forward the mandible by intermaxillary traction, the whole tendency is towards the relief of the third molar. There must be a stimulation of bone growth—certainly there is not inhibition, and there is a definite tendency as we have found to our cost—and sometimes to our advantage—towards a forward flow of the whole alveolus and the teeth therein. If anything, more room is made for the wisdom tooth and the threat of impaction is minimised. If in a Class II case we decide to extract premolars, we probably have very good reason, but do not let us pretend that we think that we are obviating the impaction of the wisdom teeth. We are not.

In Class I cases I believe any orthodontist would hesitate a long time before removing four premolars. If he does he can rightly claim to have given some relief to the third molars. If it is considered wise to remove two upper teeth, then the lower third molar trouble will be aggravated very much more certainly than in the case of Class II and for the same reasons. If there is any truth in the accusation that orthodontic treatment is one of the causes of the prevalence of impaction, which I doubt very strongly, then it is treatment with extractions in Class I and Class II cases—not conservative treatment.

(When I refer to Class I and Class II cases I am not considering those cases in which posterior teeth have moved forward owing to the premature loss of temporary molars. That factor may, of course, influence the whole question of extractions.)

The Class III case is different—but have you ever heard of a real Class III case which developed impacted lower molars. As far as my experience goes the question seldom arises. I agree that the removal of lower premolars in a Class III case would tend to free the lower third molar. In such cases, however, there is usually an abundance of space anyhow.

There is an important exception. In a mouth in which caries is rife it may be necessary to remove one or more of the first molars on

this account. If such a case were Class II and I had decided to extract teeth for purposes of treatment, I should remove all four molars, the lowers before the eruption of the twelve year olds for choice, and the uppers after at all costs. In this way I should correct the occlusion in the molar region and make use of the upper space to move back my premolars into normal occlusion with the lowers. In a Class I case of carious first molars, it would be wise, if one could decide in time, to remove all four first molars before the eruption of the second molars. In either case you will see that the problem of impaction of the lower third molar is satisfactorily solved. If it transpires later that there are no lower third molars—it's just too bad.

In my view the extraction problem is one of common sense, with the reservation that the orthodontist has made himself sufficiently familiar with all forms of treatment in order that he may not be forced to limit his methods owing to lack of skill and experience. I would say that the orthodontist should aim at conservative treatment wherever possible, and should resort to the extraction of good teeth only when there is no alternative and after considerable deliberation. With the reservation that classification is only a means of communication and that each case should be treated on its individual merits, I would quote the following instances where I should consider such treatment justified :—

(1) Cases mutilated by the loss of permanent teeth due to caries or other causes. It may be convenient to balance the loss or losses and make use of the spaces in treatment.

(2) Cases in which the early removal of deciduous teeth has led to the gross movement forward of the permanent molars. Unless it is possible to move these teeth back to their original positions extractions may be inevitable.

(3) Cases in which the development of the associated bony parts—the “apical base” of some authorities—is disproportionately small compared with the area of tooth surface, and where further development is unlikely to adjust this disproportion.

(4) Cases of gross postnormal occlusion in which the fault lies entirely or almost entirely with the upper teeth. Obviously the treatment of such a case by intermaxillary traction would result in a prognathous appearance—and then relapse.

I would add that any question of extracting sound teeth should be delayed wherever possible until the age when the permanent dentition is in place. Not till then, and not always then, can one judge what the development is likely to be.

You may notice that I do not include here Class I cases in which there has been no previous removal of permanent or temporary teeth. I think that it is generally accepted that the removal of four premolars in Class I cases could be justified only in very special circumstances, such as double prognathism, if treatable. I myself feel the same attitude towards the removal of two upper premolars in normal occlusion cases. The amount of space required for irregular front teeth is small and therefore there must follow a considerable amount of tilting forward of the posterior teeth. In other words we sacrifice the whole occlusion for the sake of the

meticulous appearance of the front teeth. (After all I suppose that is what we are paid for.)

If the case is Class I—normal occlusion—and if there has been no forward movement of posterior teeth, is there any need to remove teeth at all in the great majority of cases? It is all a question of the definition of normal, and in this case the question is “what is the normal vertical plane of the anterior teeth?” It has never been defined—it cannot be defined, and so it is left to the judgment of the operator, and perhaps the patient.

I think that people who have travelled a good deal would tell you that we are one of the most prejudiced and intolerant nations in the world. We think everybody else is wrong! He probably is most of the time, but by the law of averages we must be wrong sometimes.

In orthodontics our prejudice runs against showing too many teeth. As a nation we like to hide our teeth and show as little as possible. (As an orthodontist I am very grateful. I am sure we should all hate some of our cases to show their teeth too much!) That prejudice tends to influence our judgment as to the normal vertical plane of the incisors. I think that we English orthodontists place that plane too far back. After all we are a mixed race of people, and what may be normal for the pure Nord is not necessarily normal for all British. In other countries where there is no such prejudice we find mouths so arranged that the anterior teeth are more forward.

A slight forward movement of the incisors will create far more space than lateral expansion. If both methods are used it is often easy to accommodate all the teeth with no crowding. In other countries cases are treated on those lines—with good results.

There is a very close liaison between orthodontic and prosthetic work, particularly from some aspects. In setting up a prosthetic case one sets the lower teeth on the ridge—if one has any sense—and the uppers have to conform in occlusion to that line. If we treated Class I cases in this way we should have to see that there was room for all the lower teeth, and set the uppers, if necessary, more forward to conform to the lowers. Even if the basal bone is not fully developed, you cannot alter that lower jaw. There are some types of face which for the sake of harmony need to show the teeth, and I think that we should watch our Class I cases from this point of view. Unfortunately the prejudice against showing the teeth is not confined to our own taste, but is shared by the patient—and there lies the difficulty.

#### EXPANSION.

I have heard so many different opinions about expansion of the arches that I feel that an introduction of this subject for your ultimate discussion may be of benefit to us all. To my way of thinking most of our cases of crowded arches are due to lack of development. Our task is two-fold—to set development on the right lines, so that future development is normal, and also to correct the abnormality which has already arisen—in other words to make up for lost time. Imagine the patient to be a car which has to cover a certain distance in a certain time. Say it has to cover forty miles

in one hour. For the first half hour, owing say to traffic congestion, it has travelled at thirty miles per hour and has only covered fifteen miles. There are two things to do—to accelerate to 40 miles per hour in order to do the last half hour in normal time, and also to make up for loss of distance by increasing speed at first until we are up to schedule. In an orthodontic case it may not be possible to be completely successful in both these objects, but they should be our ideal. In these cases of lack of development it seems to me that expansion must form part of the treatment, and I disagree with those who assert that you can get no stimulation of bone growth by this means. We must be careful, however, not to overrun our objective. I believe that we can effect improvement up to but not beyond nature's intentions, and that an over-expanded case will relapse even after retention. That is another point. An expanded arch must be retained just the same as any other tooth movement—longer in fact—until the surrounding muscle development has had time to adjust itself to the new framework—and that development should be encouraged by muscular exercises.

I think, too, that we expect too much of expansion. Lateral expansion produces very little antero-posterior space, in fact it is my experience that lateral expansion alone tends to produce a slight flattening in the front of the mouth with little or no relief of the crowding there. Where space is necessary, in order to obtain the necessary lengthening of the arch to accommodate crowded anterior teeth we must add forward expansion to our lateral expansion. Failure to do so is one of the reasons why Class I cases tend to relapse.

#### RETENTION.

The ultimate retention of a case depends entirely upon a condition of equilibrium—which should be our ultimate aim, and if equilibrium is not obtained the case will relapse. After all that is nature's way of producing a normal dentition. A condition of equilibrium is reached in which the teeth occupy such a position of alignment that the opposing forces are equal and therefore neutralised. Any factor which arises to upset that equilibrium will produce an abnormality. Unfortunately there is usually more than one cause for this upset, so that it is not easy to re-establish the condition of equilibrium. But the fact remains that if when our case is finished a condition of tension exists, where the force from one direction is not balanced by an opposing force, the case will relapse as sure as fate.

It is from the point of view of equilibrium that I would emphasise the danger of the removal of a lower incisor. Fish, in his denture technique, has pointed out the strength of what may be called the strap muscles—the semi-circular vertical bands of muscles at the corners of the mouth. He wisely advises us to avoid these muscles with a denture both upper and lower, but particularly with the lower. It is this muscular power which causes the collapse of the anterior teeth on removing a lower incisor. Why it does not always have the same effect I have not been able to find out, unless it is due to personal habits of speech, expression and mastication of the individual. An added danger of this collapse is that the

internal resistance being removed there will surely be a tendency towards a similar collapse of the upper anterior teeth. I have removed one or two lower incisors with success, and one or two which I have had cause to regret. Today I would hesitate a long time before taking such a risk.

This question of equilibrium brings forward another point of interest. I cannot understand those authorities who assert that a lower wisdom tooth developing and attempting to erupt in too little space has no effect upon the relapse of a treated case or even upon the crowding at a late age, of teeth which never before needed treatment. They say that a case which relapses on development of the wisdom tooth would have relapsed anyhow. There is no means of disproving this, but if we fully appreciate what a delicate state equilibrium is and how little it takes to upset it, then we cannot gainsay that the sudden additional pressure of such a tooth may have an effect. Most of us have seen many cases in which the first sign of movement has occurred at this time, and I think we should watch carefully the development of this tooth in any adolescent under our care, whether it has been treated for any abnormality or not, and I myself should have no hesitation in removing the twelve year old molars in a case of threatened impaction if the position of the unerupted teeth were favourable, or alternatively the removal of the unerupted teeth.

#### SUMMARY.

1. I have brought forward the question of orthodontic treatment of the masses, and I have suggested that the means of tackling this problem lies in the instruction of the general dental practitioner. Orthodontics suffers not only from the indifference and lack of co-operation of large numbers of practitioners, but also in some cases from direct antagonism and adverse criticism. This is due in a large measure to a lack of understanding of our work, our ideals and our difficulties. Anything that we can do to encourage a better understanding—and what more obvious way than attempting to help him in his difficulties—will further the cause of orthodontics and benefit humanity—all except the Jack Hulberts and Leslie Hensons of the future. Now that orthodontic views are more moderate and therefore probably less antagonistic to popular dental opinion, seems to be a good time to embark upon this work.

2. My introduction of the question of personal equation of the operator may have appeared to be an attempt to penetrate fog with a white light, thereby making the fog infinitely worse. In point of fact I have endeavoured to show that the treatment of an individual case is a separate and personal affair, and that we probably do not disagree in fundamental principle so much as a general discussion would lead the observer to believe. Ultimately one must develop one's own personal methods of treatment and general technique, learning all one can from outside—from text books, from other men, and from such meetings as we hold here,—but relying also upon one's own experience. Orthodontics is not a subject which can be taught by rule of thumb.

### LOWER THIRD MOLARS.

It is a misconception that the removal of teeth for orthodontic purposes effects a relief of the lower third molar. It is seldom that the removal of a sound lower tooth would be contemplated and the removal of teeth in the upper jaw serves if anything to precipitate impaction of the lower third molar. Conservative treatment by intermaxillary traction in Class II cases tends to have the opposite effect.

In my opinion it is possible for crowded third molars to cause the partial relapse of a treated case by upsetting the equilibrium established. In any case, whether he believes it or not, the orthodontist is wise who takes no risks but watches carefully the development of this tooth.

### EXTRACTIONS.

We should be wise if we followed Angle's principles except in such cases as we believe him to be wrong—rather than take the opposite attitude and extract in all cases unless we see some very good reason for not doing so. Don't forget the King's Horses !

### EXPANSION.

In my opinion bone growth can be stimulated by expansion of the arches up to a point. That point is the development which would have been attained by normal growth if the latter had not suffered interference. Beyond that point we must expect relapse. In any case an expanded arch must be retained to allow of the complementary muscular development, which should be encouraged by exercises. Lateral expansion does not increase the length of the arch to any great extent. If this is required, forward expansion may be necessary.

### RETENTION.

This is a question of equilibrium. We must try to work with Nature, rather than to fight Nature. If we imitate Nature's methods by establishing equilibrium on completion of a case, there will be no relapse. An attempt to visualise this condition of equilibrium may assist materially in our original diagnosis and prognosis and our conduct of the case during treatment.

### Discussion

The PRESIDENT said he was sure everyone present had listened with great interest to the paper so aptly named by Mr. Russell Marsh. It contained such a tremendous amount of substance that one hardly knew where to begin a discussion on it, but there was one point he would like to mention. He had always understood, at any rate from the views expressed by Continental cartoonists, that what was commonly known as the English facial appearance was the opposite of that described by Mr. Russell Marsh. He had no idea that the English facial appearance was that of retracted teeth ; he had always been under the impression that it was rather the reverse, certainly from the Continental cartoons that one saw.

Mr. C. SCHELLING said it appeared to be true that the more things changed the more they were the same. The routine treatment adopted by Mr. Woodhouse at the Royal Dental Hospital was to remove every

six year old molar that had the slightest fault, and he believed the same practice had been followed by Mr. Preece in his dealings with the Jewish boys under his care and by Mr. Gardiner at the police orphanage at Teddington. That was many years ago, and now Mr. Russell Marsh was advocating the same treatment. He had just seen a lad of seventeen years of age who had no caries but there appeared to be no room whatever for any wisdom teeth. He had not had him X-rayed and he did not propose to do so, but was it his duty to remove all the six year old molars ?

Mr. E. E. WOOKEY said that he understood Mr. Russell Marsh considered the accuracy of the articulation as rather more important than the accuracy of the arch of the anterior teeth. Speaking from experience in general practice, he would rather take the opposite view. He had had a large number of patients who seemed to keep in a good state of health with most inferior articulation. It seemed to him that one could rather overstress the importance of articulation, whereas one could not overstress the importance of the facial appearance in front, especially in the case of a woman. He also gathered that Mr. Russell Marsh considered that the removal of the 6's did not cure impaction. Personally he had come across a very large number of cases in which the 6's had been removed and there was no sign of impaction in any of those cases.

Mr. CHAPMAN said that Mr. Russell Marsh's papers were always very amusing. It did occur to him that, instead of referring to the factors which brought about one's failures, it might be better to think of the factors which brought about one's successes. That reminded him of a case to which he had referred at a previous meeting of the Society. It was a case of very marked crowding and normal arch relationship, which some years ago he would certainly have thought needed treatment very badly. About six years later the child got a beautiful set of teeth, and she had had no treatment except cod liver oil and sunlight. Mr. Russell Marsh had spoken about the treatment of the masses, and personally he would like to see the masses treated. He had been thinking a good deal about that lately, and he could not get over the fact that he saw a large number of children coming up for orthodontic treatment who had not had the conservative treatment that they needed. It seemed to him that the conservative treatment must be completed before one could begin to think of the orthodontic treatment. That was the problem he was up against in the treatment of the masses.

Mr. PACKHAM said that among the many points which Mr. Russell Marsh had mentioned there were two which he would like particularly to thank him for bringing forward. One was his insistence on the care with which each patient should be considered before extractions were undertaken. That was a matter which had always impressed itself upon him both in private practice and in hospital practice. The other point was Mr. Russell Marsh's suggestion that much could be learned from orthodontic failures. He himself had many times urged that the Society should devote an evening to a discussion of cases which were not necessarily failures in the ordinary sense of the term but had not progressed in the way in which the operator thought they would.

Mr. RUSSELL MARSH, in reply, said that when he suggested that members should bring forward cases that were not altogether successful he did not consider that they need be published. He did not mind the members of the Society seeing the slides he had shown and any others that they cared to see at a meeting of the Society, but he did not consider that such cases should be published in a journal which

went all over the world, particularly in view of the fact that some of them were current. Members might feel more ready to bring forward unsuccessful cases if they knew that they would not be published. They were allowed to edit their communications, and they could edit them right out of print if they liked. The President had referred to the characteristic appearance of British people according to foreigners. The characteristic appearance of the prominent teeth, as always shown in the comic films of the French pictures, and so forth, as characterising the Englishman, was surely characteristic of all untreated cases, but the tendency of the Englishman not to want to show his teeth too much was a national characteristic and was the patient's wish as well as the orthodontist's. Mr. Schelling had spoken about the six year old molar theory. Mr. Cale Matthews had told him that orthodontic cases used to be treated by the removal of the six year old molars, but he did not think that in those cases orthodontic treatment had followed as a rule. His suggestion was that when those teeth had to be removed or when there was an excuse for removing them, as when they were carious, the spaces could very well be made use of. He thought Mr. Wookey had misunderstood his remarks about the removal of the six year old molars. His point was that that was the only case of extraction in which he considered there was relief of the lower wisdom teeth.

Referring to Mr. Wookey's suggestion that the facial appearance was more important than the articulation, he said he thought that both were important. He had suggested that it was a pity that one had to sacrifice the occlusion for the sake of the front teeth, but if the occlusion could be maintained and the front teeth corrected he thought that was better than using an extraction method in which the occlusion went wrong. He agreed with Mr. Chapman that orthodontists could learn from their successes as well as from their failures. When he referred to the masses he had really in mind middle class people, who fell between the two stools of hospital treatment (in which there was not enough service for the people who demanded treatment) and Harley Street practitioners, whose fees were beyond them. At the moment there was very little provision for the middle class person of moderate means. That was chiefly because the lay dentist as a rule had not any knowledge of or interest in orthodontics. If he had, it would still be difficult to treat the cases cheaply, but it might be worth his while to do it at a loss, because it was a wonderful practice builder. With reference to Mr. Packham's remarks as to the question of extraction being considered very seriously, he felt that only orthodontists of experience should decide whether extraction should take place or not. He was afraid that extractions were carried out in a number of cases because the dentist who was treating them did not know how to treat them in any other way.

The PRESIDENT expressed the thanks of the Society to Mr. Russell Marsh for his paper, and also to all those who had taken part in the discussion.

The meeting then terminated.



## RADIOLOGY IN RELATION TO ORTHODONTICS.\*

By D. A. IMRIE, M.D., L.D.S.Glas., D.M.R.E.Camb., and  
K. C. SMYTH, L.D.S.Eng.

THE chief value of radiography in orthodontia is concerned with accurate localisation of unerupted teeth, their development and "lie" with relation to their visible fellows.

The art of localisation of hidden structures in radiography has three main principles.

(1) Production of two views at right angles (or as near as practicable) to one another, e.g. needles in the limbs, stone in kidney, etc.

(2) *Parallax*, i.e. the production of two or more views at varying angles, when the relative shift of one object to the others can be observed and deduction made therefrom.

(3) *Stereoscopy*, i.e. the production of two views with a shift of the source of X-rays, corresponding to the distance between the pupils of the eyes, approximately 6 cm. This is best obtained by making the shift 3 cm. on either side of the predetermined optimum position, and across the long diameter of the most prominent object. For instance, stereoscopy in the chest is usually carried out by making the shift vertical, i.e. across the long axes of the ribs.

The radiographs must subsequently be examined in some kind of stereoscope so that one view is carried to each eye. The co-relation of the images can then be carried out in the brain and the sense of depth results.

Of these three possibilities, that of choice is always the first. It is most accurate, it requires no deductions to be made and it requires no special additional apparatus to examine the radiographs. In this regard it should be remembered that a certain proportion of individuals are incapable of using a stereoscope, even when they have use of both eyes.

The second and third choices, then, should be resorted to only when the first is impracticable. Such a circumstance arises in examination of the shoulder and hip joint, when the thickness and interference of the opposite side make accurate and satisfactory depiction of the object under examination impossible.

In dentistry the first choice is always possible. It is true that production of two views exactly at right angles is not always practicable, but it is possible to obtain one at right angles to the occlusal plane, and one in the plane of which we are accustomed to examine the teeth across their long axes. From these two views it is always possible to determine the positions of unerupted teeth or hidden objects with relation to the arch of the erupted teeth.

\* Read before the British Society for the Study of Orthodontics, 1936.

Hitherto, some difficulty has been experienced in making accurate, so-called, occlusal views of the upper jaw, since to obtain these it was necessary to pass the beam of X-rays through the skull and brain. The density of these precluded clear delineation without dangerously long exposures with apparatus of low output. This difficulty has been overcome by the production of a small cassette containing intensifying screens which reduce the exposure to about one-tenth. Such radiographs are now well within the range of dental units.

A former difficulty in production of occlusal views of the mandible by danger of high tension shock has also been overcome by the introduction of shock-proof apparatus which can even be held against the patient during the exposure.

A very important result of this accurate localisation is the determination of the position of unerupted upper canines—whether they be to the buccal or palatal side of the line of the arch, and whether there be sufficient space for eruption of the teeth.

*Profile Radiography.*—I am still somewhat uncertain as to the real value of this technique in orthodontia. It certainly can make manifest the underlying cause of some facial deformities, but whether radiography is necessary for this purpose is doubtful. It seems that it might be used more than it is, in prosthesis. A template made from the outline of the soft tissues could guarantee restoration of the profile, if that were desired, after removal of all teeth.

The technique is being used by Dr. Korkhaus of Bonn in the study of development of the maxillæ in children being fed on varying diets—crisp toast, etc., and by Dr. Rehak in the study of development of the mandible in relation to impacted third molars. These are scientific investigations which lack practical application and a rather elaborate technique is being used. For practical purposes valuable information can be obtained by making the radiographs at a focus-film distance of two metres, the film or films contained within the cassette, which is placed against the face, parallel to the sagittal plane.

At the distance of two metres the distortion produced by spread of the beam of X-rays is reduced to about 3 per cent., which for practical purposes is negligible. The exposure is a relatively long one, about twenty seconds passing 10M.A., but this can be achieved easily with the head fixed in the head-rest.

To obtain a view of the soft tissues one film is placed in the cassette outside the intensifying screens, and the bony tissues are demonstrated in a film placed between the screens.

The various procedures I have described are possible of achievement with the dental units marketed, but the technique will have to be worked out by each operator. Great variation obtains in the material used, speed of films, screens, output of apparatus and convenient or usual focus-film distance. All of these factors will cause variation in time of exposures, and I would add that individual patients vary. I have assumed perfect technique in the dark room.

D. A. I.

After the foregoing clear exposition from the radiologist's point of view, it only remains to add a few remarks from the orthodontist's point of view, and to show some examples of the practical value of radiographs in diagnosis.

I do not suppose that any member of this Society would be so rash as to decide upon the extraction of first premolars without first ascertaining, not only the presence of the second premolars, but whether they are in such a position as to have a reasonable chance of erupting satisfactorily. But the point which it is desired to make goes beyond such an elementary precaution as has just been mentioned. In order to make a diagnosis and prognosis as accurately as possible, it is necessary to have the maximum amount of information which bears in any way upon the development of the jaws and teeth, and surely the knowledge obtained from radiographs must come very high in the list of factors in this connection. However low the percentage of certain abnormalities may be, one cannot afford to risk overlooking any one of them. Unexpected conditions are always cropping up, and we can only rule them out when we have made certain that they do not exist. To sum up, it is considered essential to have a complete radiographic examination of every orthodontic case before a final diagnosis is made.



FIG. 1.—Marked disorganisation of upper dental crest in case of cleft palate. True supero-inferior view gives best orientation of teeth.

Perhaps the commonest teeth to be absent from the series are the lower second premolars, and Fig. 8 shows two cases of this condition. The older child is aged 12, and it was obviously necessary to ascertain whether these teeth were present before undertaking a considerable amount of treatment. The stunted roots of the

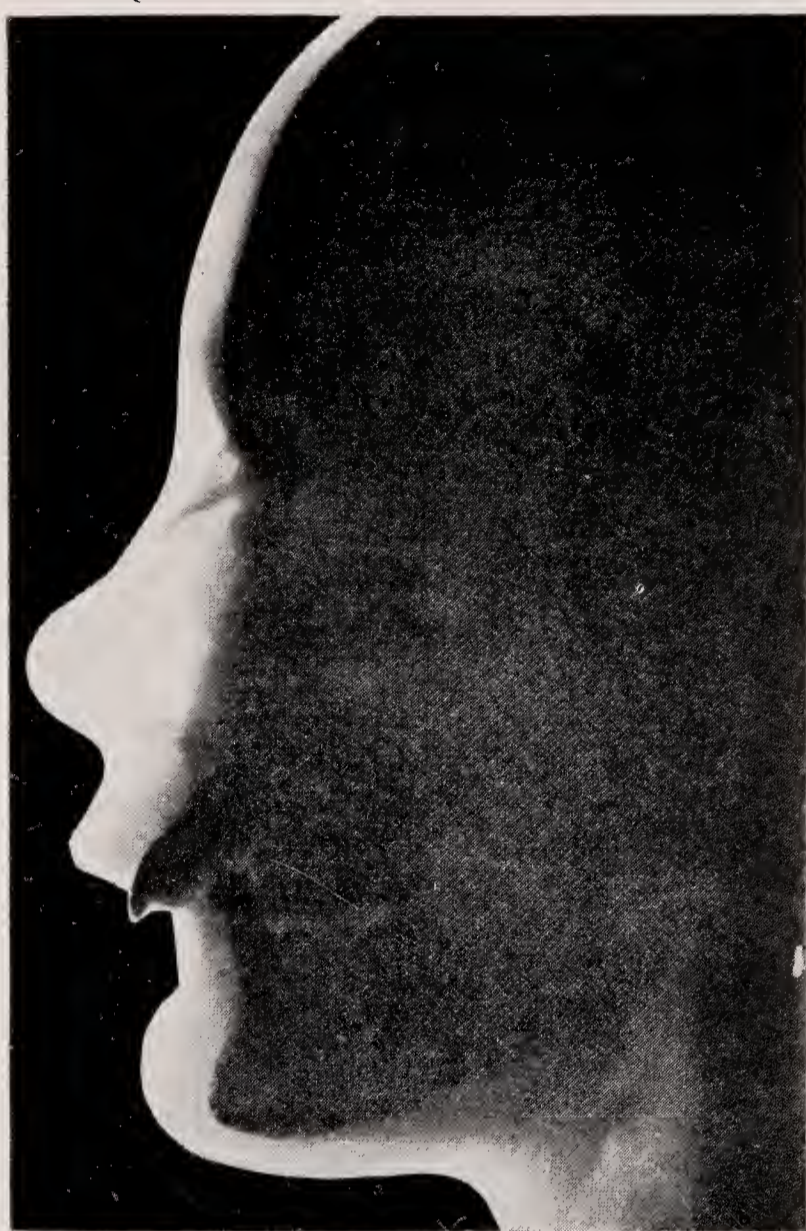


FIG. 2.—Profile view, superior protrusion.

second deciduous molars would make it seem unlikely that they could be retained as functional teeth for any considerable length of time. The treatment undertaken in this case, preceded by the extraction of the deciduous teeth, had included an appliance to allow the first permanent molars to come forward without active pressure, but with an appliance preventing the medial tilt which would otherwise inevitably occur. The spaces are closing quite satisfactorily, the first premolars, of course, being kept in position, and the final closing of the space will probably be done by means of active pressure. The second case of this type is a boy aged 8, and the absence of the teeth was totally unsuspected. There was crowding in the lower arch, and at the first visit the parent was informed that probably considerable expansion of the lower jaw would be necessary. Fortunately, the radiographs were taken before the final report was made, and obviously it must affect the prognosis considerably.

A special point to which attention is drawn is the value of the *true* "occlusal" X-ray (see Fig. 1). Fig. 5 shows one condition rather rare and another quite common. The right lower deciduous



FIG. 3A.—Photographs of girl aged 10 with deficient secondary dentition

lateral and canine are geminated, and there is no sign of the eruption of the permanent lateral and canine in a boy aged 12. X-rays taken from the front show the absence of the lateral incisor and indicate fairly clearly the position of the canine, but it remains for the occlusal X-ray (Fig. 6) to confirm the probable position of eruption. The upper radiograph shows clearly a typical relationship of developing canines which are compressing the roots of the lateral incisors both medially and lingually, and here again the occlusal X-ray gives much additional information as to their exact positions.



FIG. 3B.—Dental radiographs to show deficient dentition.

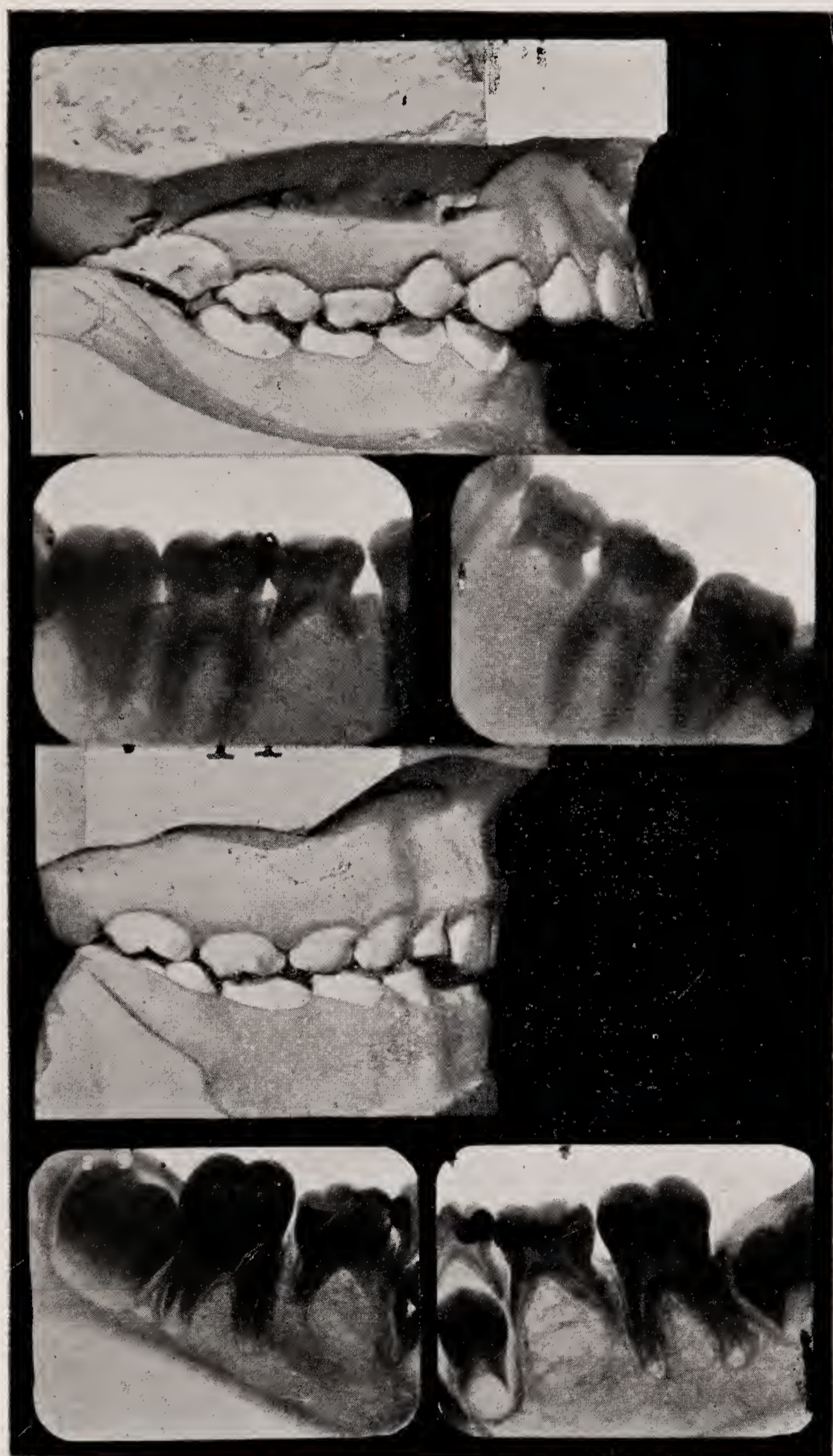


FIG. 4.—Two cases of absence of lower second premolars, aged 12 and 8 respectively.



FIG. 5.—Congenital absence of lower lateral incisor, with gemination of deciduous lateral and canine.

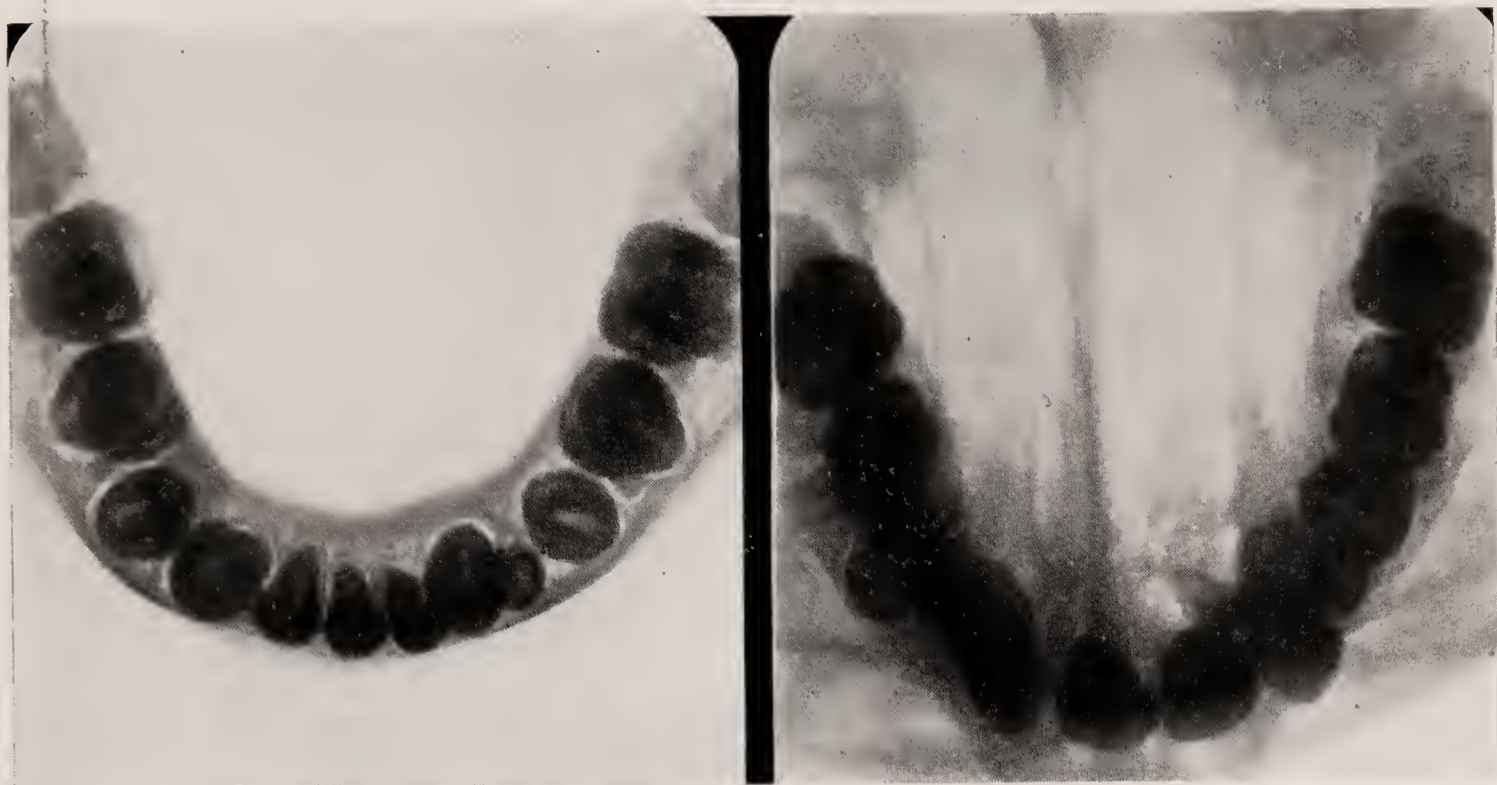


FIG. 6.—Occlusal radiographs of case in Fig. 9.

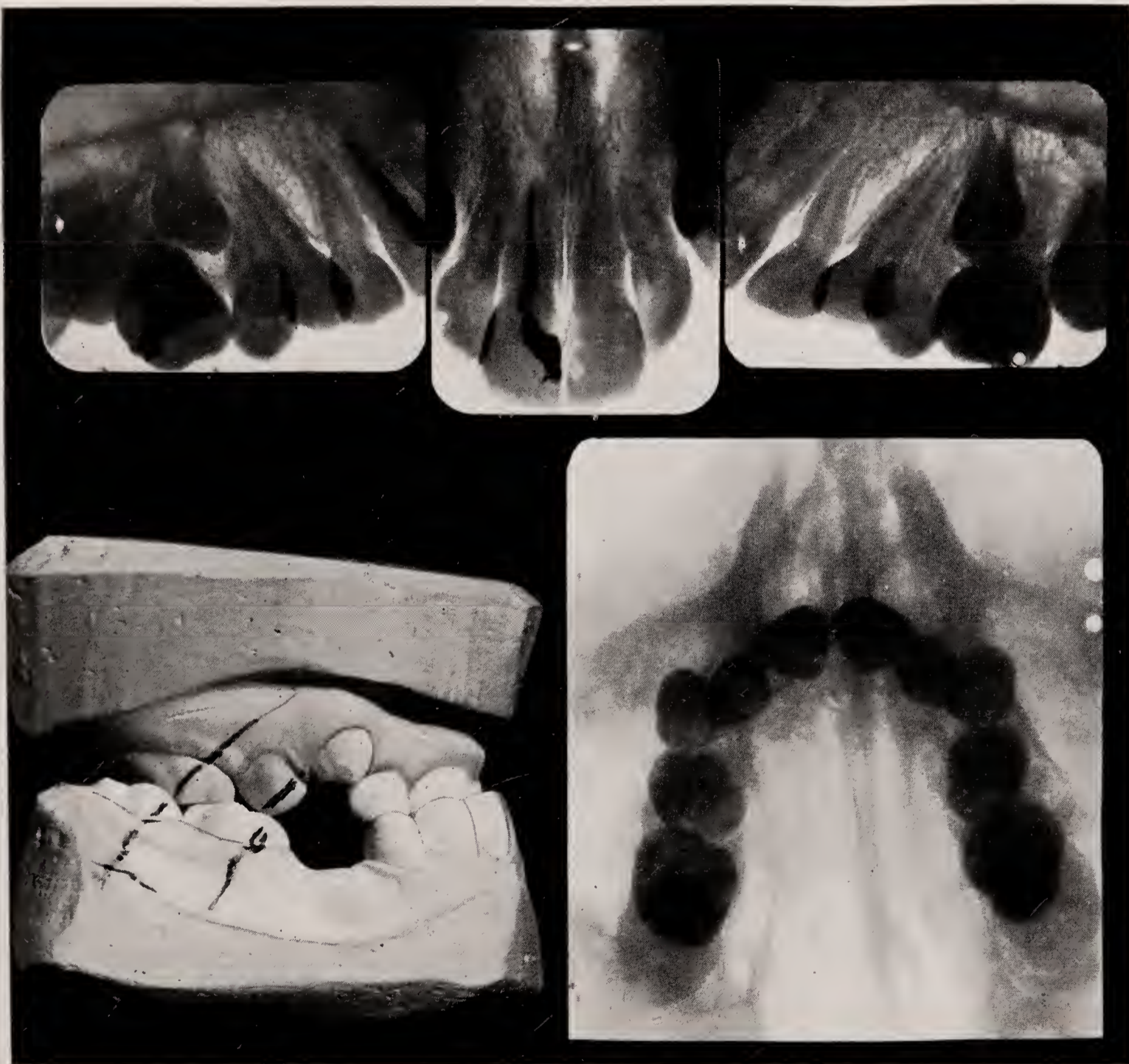


FIG. 7.—Unsuspected apical infection of incisor about to undergo orthodontic treatment. Occlusal radiograph shows position of impacted premolars.

Fig. 7 shows two interesting points. The models were sent for an opinion. Whatever decision might be made about extraction, it is obvious that the treatment must be chiefly directed towards moving the upper incisors as far forward as possible. The X-ray reveals a root-filling in a central incisor, not reported by the dental surgeon who referred the case, and definite apical trouble. It is well known that orthodontic treatment is often blamed for causing caries, gingivitis, absorption of roots and death of the pulp, and here is one safeguard of the reputation of the orthodontist. The other point demonstrated here is the position of the impacted premolars, so high up in the bone that from the lateral views one might imagine that they would be displaced in a lingual direction, which the occlusal view shows not to be the case.



FIG. 8

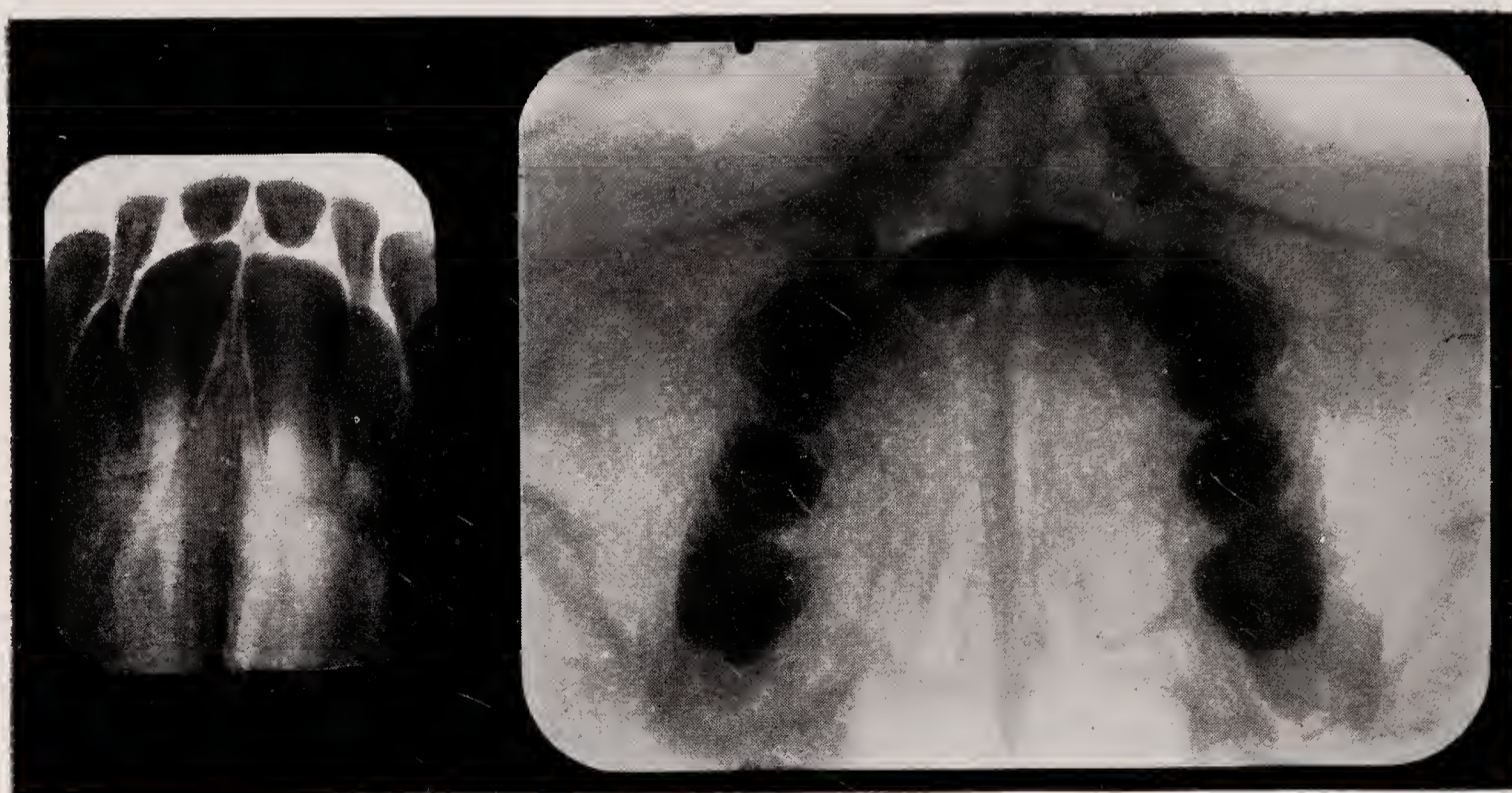


FIG. 8.—Cramped positions of permanent incisors, due to lack of premaxillary development. Lingual occlusion of maxillary deciduous incisors.



FIG. 9.—Delayed development of maxillary first permanent molar.

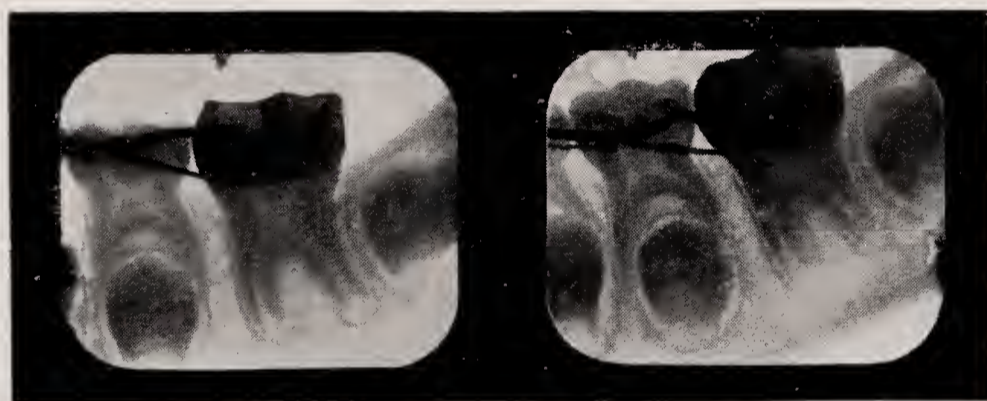


FIG. 10.—A test for orthodontic bands.

The case shown in Fig. 8 is one where the lower molars are actually slightly in post-normal occlusion, and yet the lower incisors are biting definitely in front of the upper deciduous incisors. The photographs do not, at first sight, give any indication of abnormality of the mandible, but on closer examination a flattening below the nose is noticeable, and this is fully confirmed by the cramped positions of the developing permanent incisors as shown in the occlusal X-ray.

Fig. 9 illustrates a rather rare case of delayed eruption of the upper first permanent molar, and it was concluded that this tooth must have been extracted but the X-ray reveals the presence of this tooth, hardly any further down than the second premolar, at the age of 10 years.

Fig. 10 shows how radiographs may, often unintentionally, reveal whether a band is fitting well or badly.

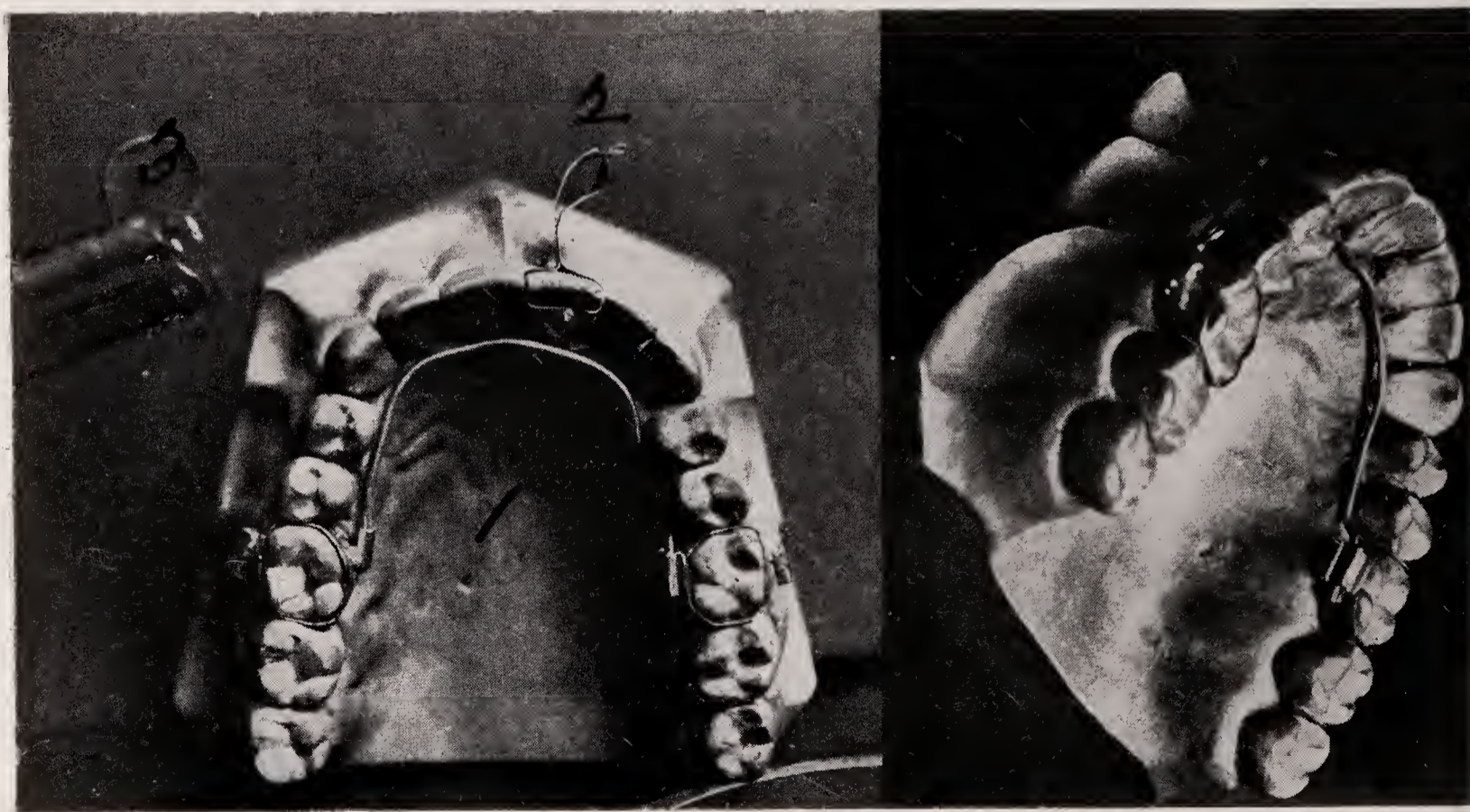
K. C. S.

## ADVANTAGES OF RHODIUM PLATING FOR ORTHODONTIC APPLIANCES.\*

By G. F. CALE-MATTHEWS, L.D.S.Eng.

It is quite simple in procedure and renders the appliances untarnishable in the mouth. The outfit was kindly lent by the Baker Platinum Company.

I show a method of constructing a horizontal double tube lock which may be used either buccally or lingually on the anchor teeth. It may be constructed of steel or precious metal and is made with the Dental Manufacturing Company's pliers used for making backings for Steele's facing teeth. A piece of ordinary strip band-metal is pinched to form a tube in the pliers. This tube is then strengthened with a piece of wire soldered or welded within it, and a second tube is pinched parallel to the first at a sufficient distance to allow the arch wire to lie snugly within the two tubes when soldered to the band. It is necessary to grind a portion from the side of the pliers to approximate the distance of the tubes to the accommodation of the arch wire. The illustration helps to explain the method of construction. The advantage of this lock is an absence of rigidity in the anchor tooth itself, which allows for the masticating stress to be taken quite normally, and yet holds the appliance firmly in the position desired.



1. Palatal arch in position.
2. Bands on I after forming with straight pliers.
3. Molar band in beak of right angle pliers.

Showing double tube horizontal  
lock.

\* *Transactions of British Society for the Study of Orthodontics*, 1936.

I am also demonstrating a simple method of fitting bands to the teeth. A groove is cut in the beaks of a pair of band-stretching pliers both straight and right angle. A long strip of metal, usually steel, is welded in the form of a band considerably larger than the circumference of the tooth to be banded. The metal is folded together and passed through the beaks of the pliers. It is then worked over the tooth in the mouth and by opening the pliers the metal is accurately and definitely adapted to the walls of the teeth. It is quite simple and economical in time if steel is being used, but there will be too much wastage in the case of precious metals.



Straight and right angle expanding band pliers with grooves cut in beaks.



Beaks of expanding pliers with grooves cut to accommodate band metal.



Steels facing backing and pliers with portion of beak cut away to accommodate the distance of second tube

Another view of bending pliers showing part cut away.



## **CLASSIFICATION OF CASES FROM THE STANDPOINT OF PRACTICAL TREATMENT.**

By ROBERT CUTLER, M.R.C.S., L.R.C.P., L.D.S.

To the average mortal the instinct to classify people and things is a very powerful one, and most of us who think at all would give much for the power of infallible analysis of people and problems met with day by day. Only too often our classifications tend to be the fruit of cursory observation, mainly inspired by our own personal prejudice and views, and this inability to separate sheep from goats only too often bars our way to better things.

For instance, supposing we discover our next-door neighbour to be addicted to wearing spats with a cloth cap, there is no reason why we should recoil from normal social contact with him, but it is likely that we should do so, whilst on the other hand we might be tempted to think over charitably of our other neighbour who wears a Zingari tie, and who is obviously dressed by Savile Row. Such an illustration, whilst apparently irrelevant is, however, germane to our subject, as such a reaction in social behaviour can well be compared to our own attitude when we come together to discuss orthodontic problems, and find ourselves confronted with unusual approaches to subjects, on which we may feel the last word has been said. We have on the one hand, men who have given many years to the study of orthodontic problems, whose knowledge has become so deep that its expression in scientific terms has become essential just as the scientist, in other spheres, prefers to illustrate the basic nature of physical phenomena by signs and formulæ.

To all such persons the scientific nomenclature has a deep significance, but in no sense has it any intrinsic value, and often it forms a disagreeable barrier between those of great knowledge and academic attainment, and those whose experience may be much less, but whose interest may be no less sincere, and by these latter I mean the whole body of students and those more junior members of the profession, and of our Society, whose very livelihood impels them to study this speciality of their craft.

Having for many years been in close contact with the student mind, and being in outlook not much more than a decade removed from a similar state, I should like to set on record my own views as to how we should make the essential nature of dental anomalies clear to those of lesser experience than ourselves. In so doing a double service is performed, as once a true mental conception of every given characteristic of any specific abnormality has been secured, the general approach to treatment becomes self evident, though naturally there must be a critical assessment of many other factors—a knowledge of which only comes in the course of years—before the technique of treatment can itself be outlined in detail.

In such a classification scientific nomenclature can play no part

but rather we must gain our ends by visual precept and by the accurate use of homely words. I know that such an approach to our subject may seem essentially retrograde, and, as such, to be discouraged, but if it furthers the dissemination of accurate knowledge regarding the nature and characteristics of established dental abnormalities I submit the means are justified, and to this end I am prepared to bring examples of its application to your expert notice to-night. In the practice of orthodontics we know only too well how much there is to confuse the keenest brain, and the fact that so many of our orthodontic cases give us constant anxiety, in distinction to the relative mental ease with which we carry out our daily round of surgical and conservative dentistry, is sufficient proof of our lack of knowledge of prognosis and of the potentialities of bone growth.

All such problems are very properly the domain of the scientist and of the clinician of mature experience and we must all be in favour of a scientific treatment of them, but the classification of dental abnormalities met with day by day is a simpler and less contentious problem, and one on which both beginner and expert might well be on common ground.

It is, I think, a reflection upon us that this is not the case, and I feel that we as teachers have in some measure failed in our mission, with disadvantage to all concerned. We have on the one hand our younger members unwilling to discuss their cases, for fear of reproof,—either actual or implied—in regard to their nomenclature, so that the possibility of gaining counsel and advice is lost to them ; whilst on the other hand, the senior members are denied contact with fresh mental approaches to problems, by which, from over-long acquaintance, their own mental processes have become blunted. Let us therefore review our knowledge of this subject in the most critical spirit and consider how it may be most effectively presented to the student mind.

In this connection we must be not unmindful of the pioneer work of Angle, on anomalies of tooth position, but the many variations in classification right down to the present methods of Simon show that no finality has yet been reached. To those of experience, whose observation has for many years had play over a wide clinical field, all such differing forms of classification fit into an easily understood developmental sequence, but to the student mind there seems to be utter confusion which is in no wise dissipated by the imposition of an arbitrary nomenclature which has not for him any great significance.

To those studying a speciality, a knowledge of the life and work of pioneers is essential, and an understanding of Angle's approach to the subject, by selecting the upper six year molar as a point in the head least liable to abnormality in position, is valuable, particularly as it gives a sidelight on the purely tooth conception of abnormality which existed at that time ; this attitude can well be contrasted with the latest original work by Simon in which fixed points on the face and head are used as data on which to build an analysis. A consideration of both views thus makes it clear to the young orthodontist that he deals not only with teeth but also with

heads and faces, and all must be considered to arrive at a *primary standard of normality*.

Our first mission therefore must be to visualise a concept of normality in facial build, not as a dry-as-dust unchanging anatomical standard, but rather as a type-form with which the greatest number of any given group—in this instance the forty odd million inhabitants of England, Scotland and Northern Ireland—will most closely correspond.

You may remember that some years ago Miss Tildesley read a most interesting paper to this Society on the value of statistical work in regard to criteria of normality, and how she showed on the screen a synthetic female profile compiled from measurements of a large number of average female students. To the best of my recollection this profile met with great approval from the members present, showing how accurately it conformed to the concept of a “normal” as it existed in the trained minds of the audience. And so we must start our student upon a study of heads and faces, for him to conceive, in his own mind, a standard of normality for the vast group with which he is in worldly contact, some part of which being, in later years, the material upon which he will practice.

There must be individual racial standards, I know—the strong, almost prominent chin of the blond Norwegian, the flattened nose and forehead of the Finn, the long face of the Spaniard and the squared calvarium of the Teuton, but our novitiate’s orthodontic practice is unlikely to be so cosmopolitan, and a combination of observation and a knowledge of the anatomical normal will soon give our student the power to pick out a “normal” English head.

Having progressed so far we need no great stretch of imagination to reduce our normal head to a cube (Fig. 1), this cube being composed, on the one hand, of the skull and basal bones with its associated specialised vertebra, and on the other hand of the jaws and associated teeth, this latter combination being obviously justified by the disposition of the roots in a major portion of the jaw bone. To add verisimilitude we can portray the nasal bones, eye socket and external auditory meatus, whilst we can amplify the picture by portraying the teeth and associated alveolar bone as distinct from the maxillæ themselves.

All this can be portrayed on our two-dimensioned diagram, which although crude is not fantastic, as you will note that the orthodox Angle occlusion is satisfied, whilst even Gray’s “Anatomy” would approve the straight line, which virtually touches the frontal eminence, the maxilla at the root of the nose, and the mental prominence. Here, then, is a reasonable schematic representation of the normal which can bring us to a precise definition of a normal or “Class I” case, which we can word as follows: “That condition in which the facial appearance and profile approximate to the most common type-form of all cases under review, and where the bulk of the bone of the jaws are in harmony with one another and with the rest of the head. In such cases, if there has been no individual tooth movement, the mesio-buccal cusp of the upper first molar articulates with the two labial cusps of the lower first molar as had been emphasised by Angle.”

Following this general definition it can be explained how in such a condition of general normality, irregularities in the involution of the tooth band, or other local factors, may result in abnormal positions of the teeth themselves, such abnormalities making division of the general class desirable and indeed very helpful, when considered from the standpoint of practical treatment. We can therefore formulate :—

Division One : Those cases characterised by local irregularities of incisor, canine, and premolar teeth.

Division Two : Those cases characterised by a premaxillary fault, resulting in a tilting forward of the upper incisor teeth only, with, or without, local irregularities, such cases being very properly termed “superior protrusion.”

Division Three : Those cases characterised by a maxillary fault of antero-posterior shortening, so that more than two of the upper incisor teeth articulate lingual to the lower incisors. Such cases are sometimes termed “superior retrusion,” giving rise to an impression that the upper jaw is pulled back, a condition which does not—and cannot—exist.

Division Four : Those cases characterised by a tilting forward of both upper and lower incisors, such cases being rightly termed “Bimaxillary Protrusion.”

Division Five : Those characterised by a retroclination—a tilting back of both upper and lower incisors.

These divisions can very easily be portrayed on our schematic diagram. (Figs. 2 and 3.)

So much then for those normal faces in which local irregularities of tooth position may call for classification, so we may proceed to *abnormal* faces the defects in jaw growth being of such a character, and of such a degree, as to be reflected in the outward appearance. The largest and most obvious group is that in which prominence of the teeth and a weakness in the lower part of the face are manifest and this we can term “Class II.”

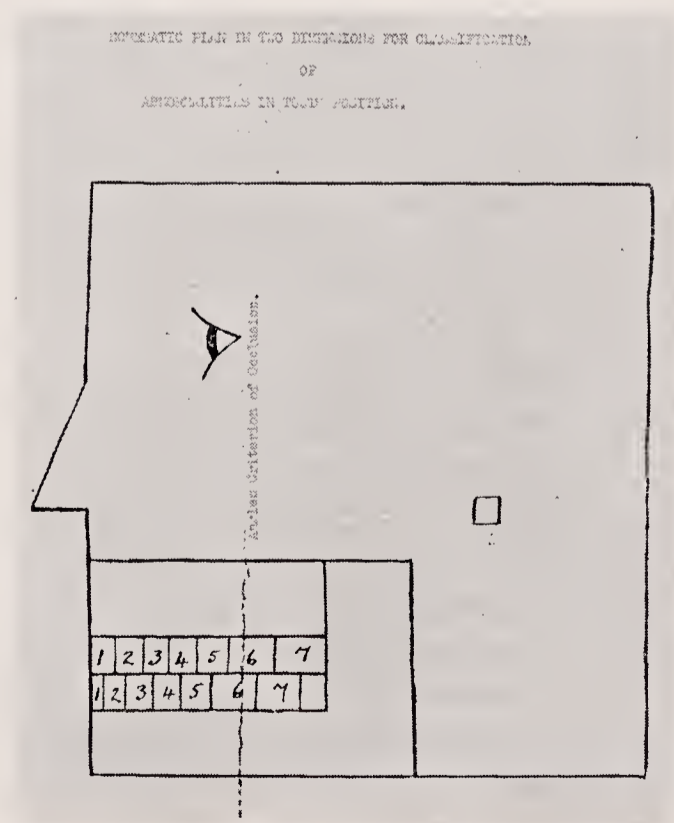


Fig. 1.

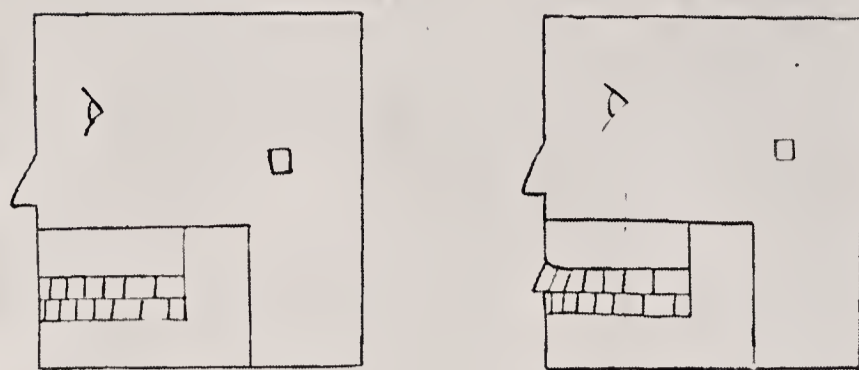


Fig. 2.

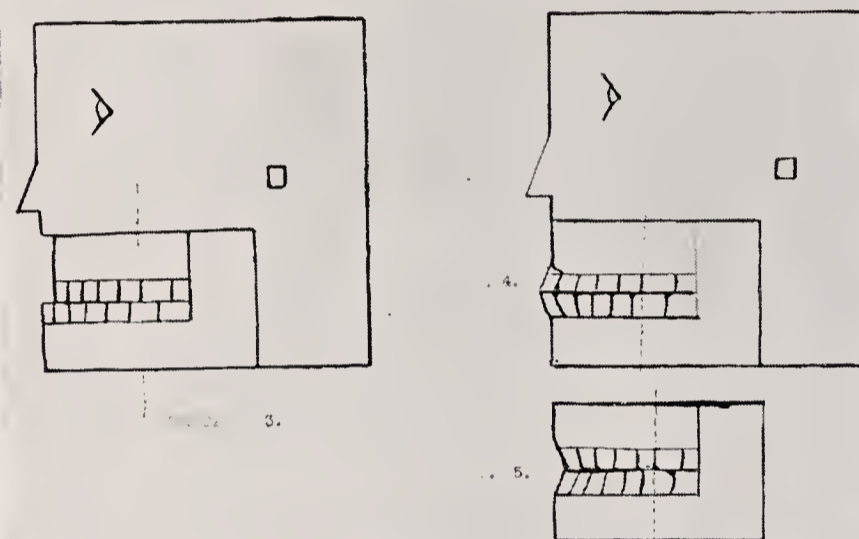


Fig. 3.

Now for this group our definition may well be : “ Those cases in which the facial contours are distinguished by a subnormal mandibular region, the subnormal lower jaw being associated with an upper jaw normal in size relative to the rest of the head. Assuming no individual tooth movement, Angle Class II occlusion will be satisfied, as the lower arch of teeth lying in the subnormal lower jaw, naturally occupies a backward position relative to the upper jaw and head.”

Of this class we can form two divisions as Angle showed us (Fig. 4), but we can frame our first division on the following lines : “ Those (Class II) cases in which the upper jaw, usually normal in size, is abnormal in shape, there being a narrowing in the intercanine region, and some degree of absolute protrusion of the incisors. The lack of antero-posterior growth of the mandible is reflected in the backward position of the tooth arch contained within it, and in the profile. The lack of vertical growth is reflected in the undue closeness of the tooth arches, the one to the other, giving an excessive overbite. (Fig. 5.) And our second division as follows: Those cases, having all the features of division 1, other than a backward tilting of the upper incisors, so that they rest against the

lower ones ; the upper lateral incisors being in a truly normal position or in some degree of absolute protrusion.” (Fig. 4.)

As a sharp contrast to the Class II abnormality in which a weakness of the lower part of the face is obvious, we have a much smaller, but very well defined, group in which there is an excessive development of the lower face, and such cases we can follow Angle and call “Class III,” formulating our definition as follows : “Those cases in which the facial contours are distinguished by a true overgrowth of the lower jaw, the mandible showing an increase in the angle made by the rami, in addition to itself being the subject of an excessive degree of growth. In such cases the maxilla is usually normal relative to the rest of the head.” (Fig. 6.)

A little reflection on this concept of the old Angle classification gives us sufficient material to consider cases in the light of it and to note how indications for practical treatment at once become apparent.

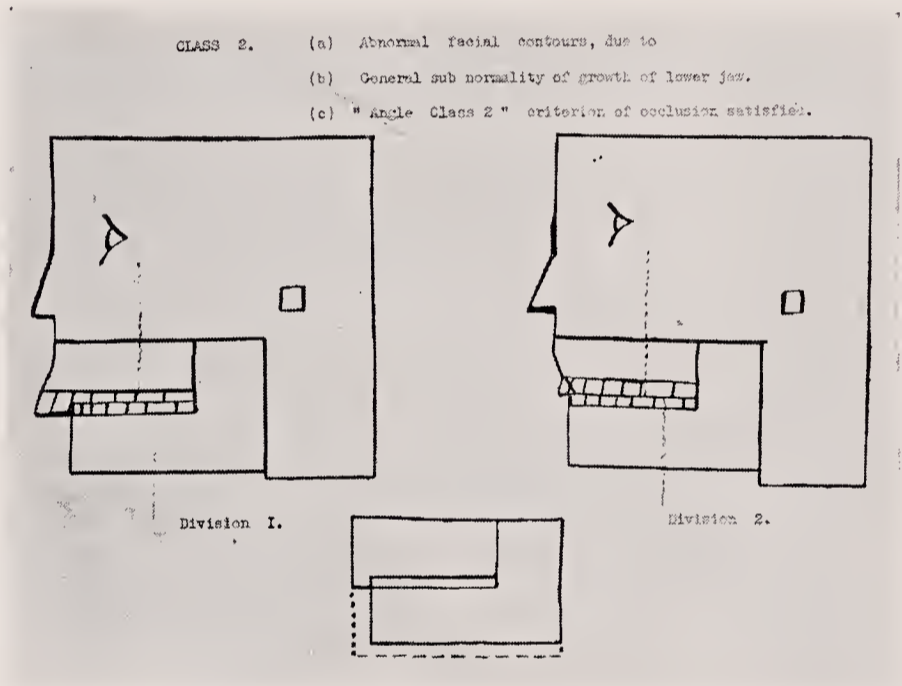


Fig. 4-

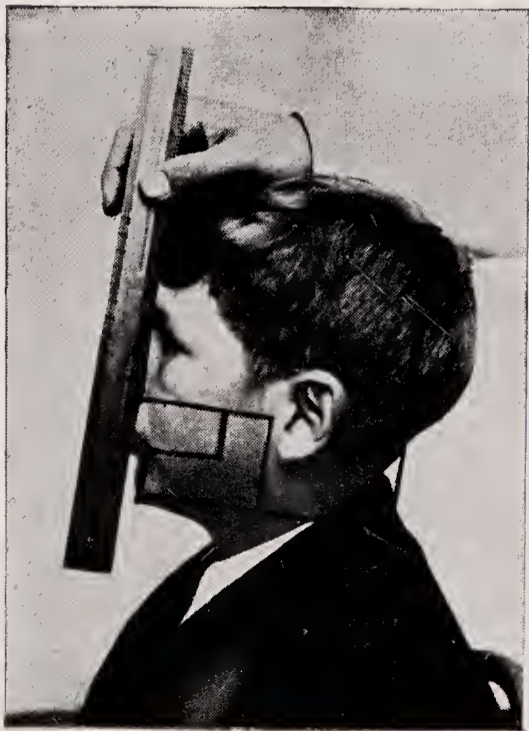


Fig. 5-

## TREATMENT.

“Class I, division one.”

In all such cases the first determination is whether the tooth abnormalities are primary, i.e. an essential abnormality of the involuting tooth band or whether it is a secondary effect of insufficient room for all the tooth units in normal alignment.

In this latter instance, the possibility of response to stimulation must be calculated, and if such response is likely to result the necessary expansion and alignment can be carried out in both jaws.

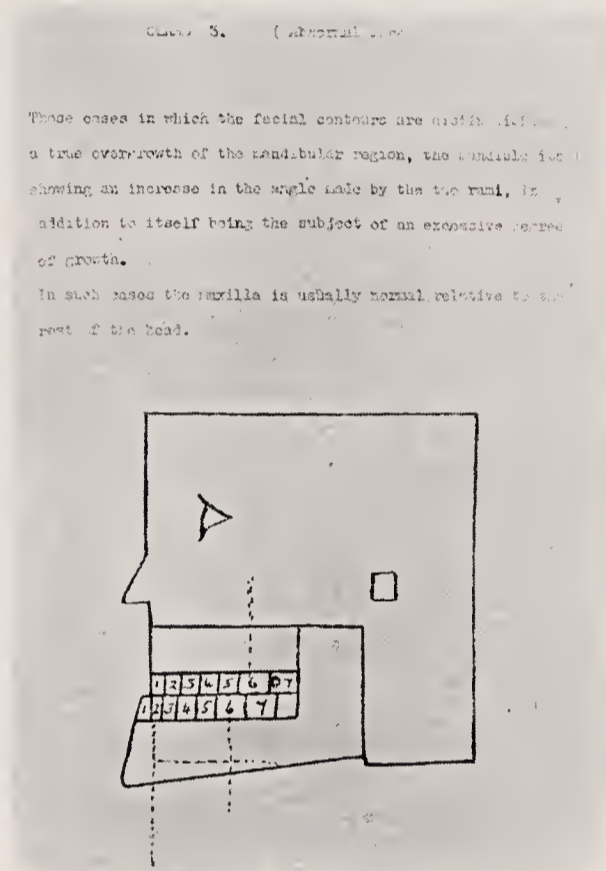


Fig. 6.

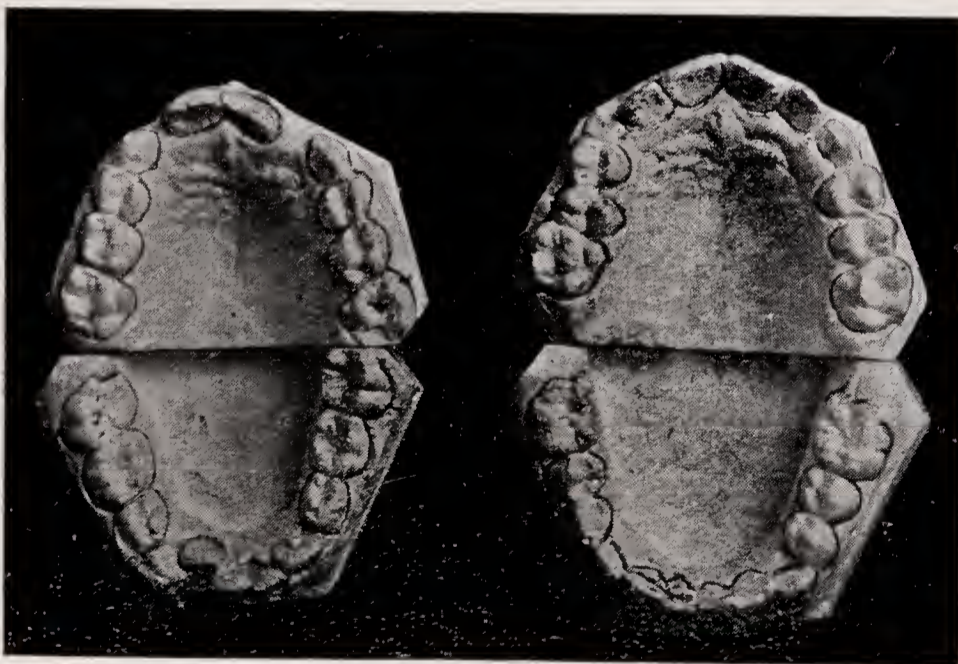


Fig. 7

If, on the other hand, it is considered unlikely that sufficient room can be gained in this way, the extraction of an approximately equal number of tooth units from both jaws will be an integral part of treatment. Such units may be a pair of premolars from

each jaw, or a pair of premolars from one jaw, and a single premolar and perhaps one incisor from the other jaw. The following is a case in point, being a division 1 case with marked crowding in both jaws. (Figs. 7 and 8): it will be noted that there is insufficient space for the upper laterals, whilst a lower incisor is completely inlocked. Expansion was undertaken in both jaws with marked improvement, but eventually it appeared that both the upper right canine and the lower left canine would have insufficient room, the outlocking of the lower canine causing it to assume a slightly buccal relation relative to the upper lateral and canine. (Right-hand models, Figs. 7 and 8.) The upper right first premolar was thus removed, together with the lower left lateral, a simple appliance being worn in the lower to push the left canine mesially, so closing the space. (Figs. 9 and 10.) The lower appliance was worn for two months only, and the case has now stabilised in a most satisfactory manner.

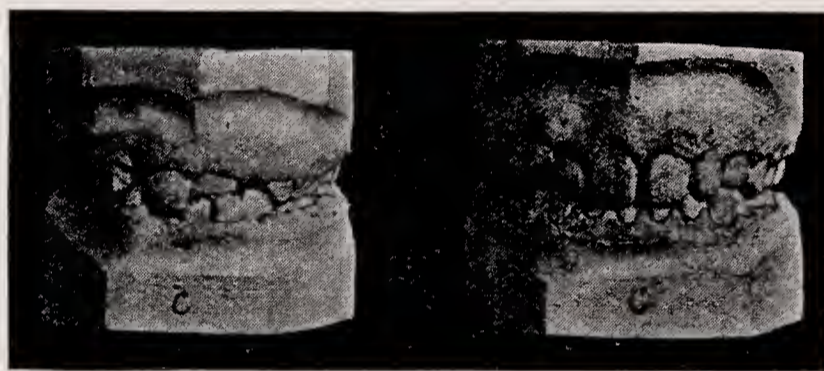


Fig. 8.



Fig. 9.

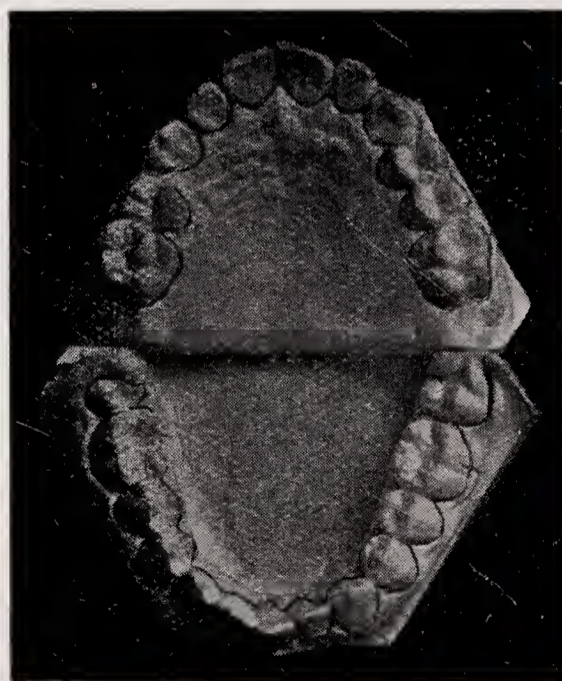


Fig. 10.

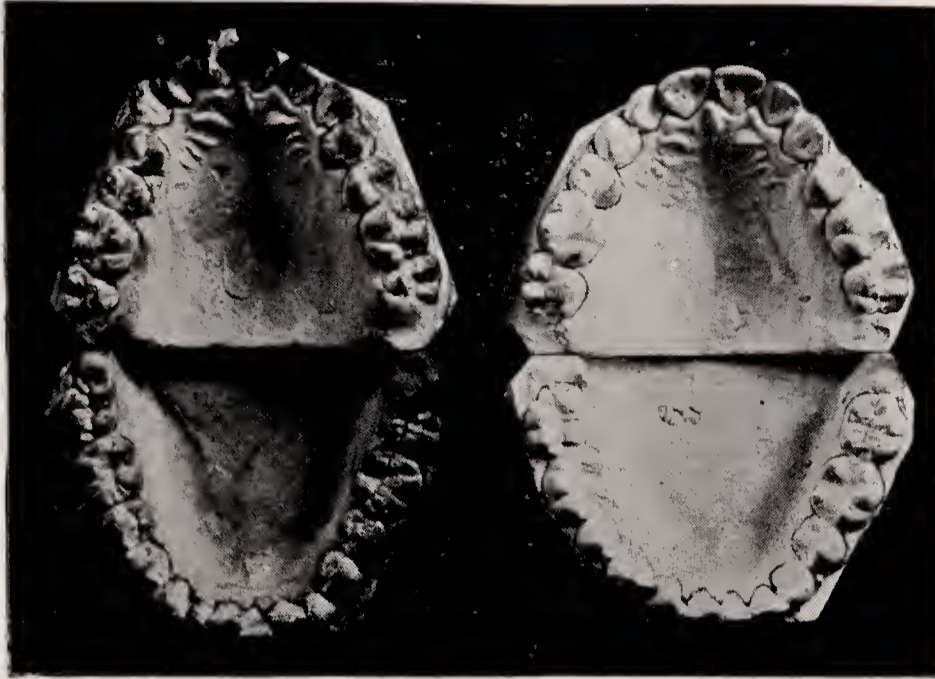


Fig. 11.

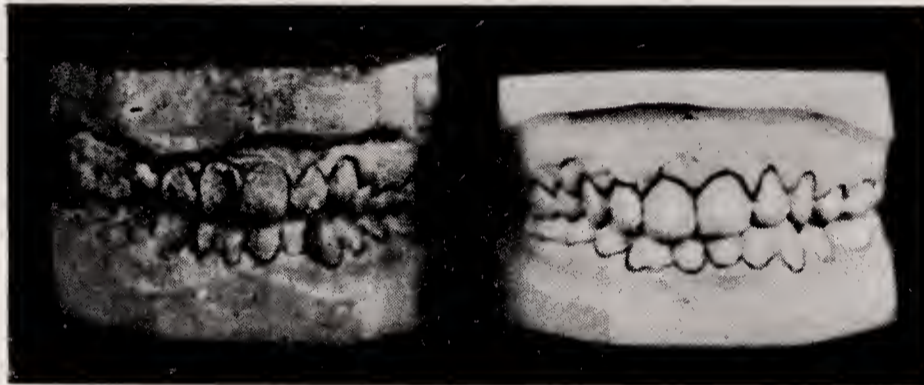


Fig. 12.

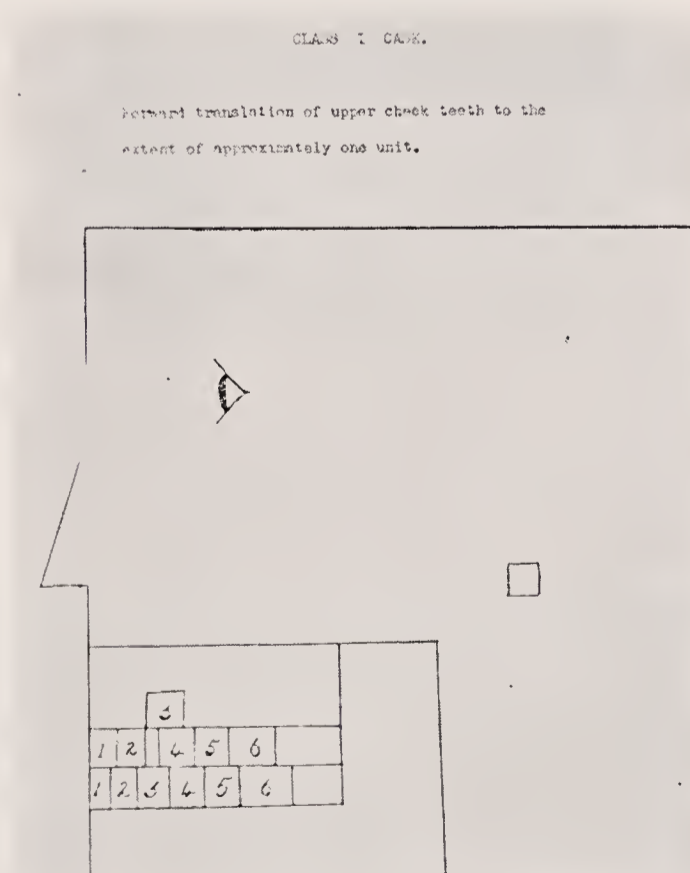


Fig. 13.

Again, the following case (Figs. 11 and 12), illustrates the essential principle of extraction in a "Class I, division 1" case. A girl, aged 15, with almost complete torsion of the upper right central incisor, with marked irregularity in the lower incisor region, gross crowding being present in both jaws.  $\frac{4}{2} \mid \frac{4}{4}$  were immediately removed and the necessary alignment effected with fixed appliances. The right-hand models in Figs. 11 and 12 show the condition at age 22, four years after the cessation of any form of artificial retention.

Such a plan of extraction naturally conforms to our principle of preserving harmony of jaw bulk which is the essential quality inherent in a Class I case, but none the less we may have occasion to modify it, without in any way destroying the validity of the underlying principle. The modification I have in mind is that type of pure Class I case in which there has been a forward translation of the cheek teeth to a degree equivalent to one tooth unit in one or other jaw. (Fig. 13.) In such an instance the removal of tooth units *from one jaw only* is required and the essential soundness of this procedure can be illustrated on our schematic plan with the greatest of ease.



Fig. 14.

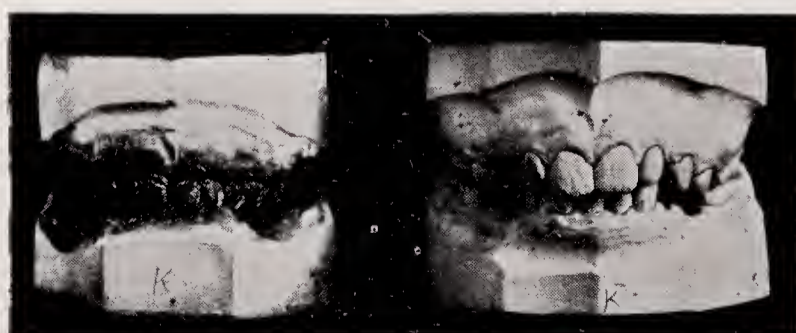


Fig. 15.



Fig. 16.

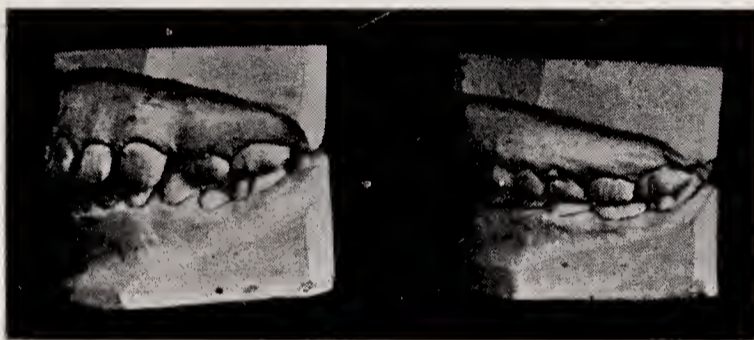


Fig. 17.

Fig. 18.

“ Division Two ” (Fig. 14).

“ True superior protrusion,” which correctly designates our division, is only rarely found as a pure abnormality, as there is almost always a tendency to Class II characteristics, but when it is, expansion in both jaws with alteration in the arch form will prove satisfactory though sometimes extraction in both jaws proves a desirable measure. If there is a tendency to Class II other principles must be borne in mind and these can be conveniently discussed later.

“ Division Three ” (Figs. 15 and 16).

Here again bearing in mind the specific abnormality involved, the obvious attack will always be on the upper jaw, advancement of the upper incisors bringing about stimulation of antero-posterior

growth ; but when a normal incisor relation has been secured it may still be found that there is some antero-posterior deficiency of space, for which the extraction of both units *from both jaws* is essential.

“ Division Four ” (Fig. 17).

These cases of pure bimaxillary protrusion are relatively uncommon in purely English types, but extraction in both jaws is obviously rational treatment. In certain instances the presence of an abnormally large tongue may play some part in ætiology, in which case spontaneous resolution of the condition after extraction is unlikely and, in fact, may make treatment unsatisfactory even with mechanical intervention.

“ Division Five ” (Fig. 18).

In these cases it is obvious that extraction is to be avoided, *particularly as the apparent tooth crowding, contingent upon the nature of the abnormality, would tempt us to take such a course.* If extraction is undertaken there is usually an adequate resolution of the tooth abnormality itself, but the profile will suffer, there being an accentuation of the “ Punch-like ” profile as has been described by Russell Marsh.

Class II : In this large group of cases different problems of treatment confront us, but the general principle becomes easier to understand if we visualise either the attainment of a complete restoration to normal on the one hand, or on the other a major amelioration of the main symptoms of the condition. The first type of treatment can well be termed “ Ideal ” the second “ Palliative.”

If we are prepared to commit ourselves to the production of an “ Ideal ” result in the strict sense of the term, we must be able to stimulate not only vertical growth of the mandible by some form of biting plane, but also antero-posterior growth by some form of forward pulling, either by biting incline or by intermaxillary traction. Such treatment we must needs combine with anterior expansion of the maxilla together with sufficient retraction to cure the element of real incisor protrusion. Two cases (Figs. 19 and 19a, also Figs. 20 and 20a) give an idea of the successful attainment of strictly “ Ideal ” treatment. The attainment of such a result is not necessarily difficult, and the beauty of the finished case more than repays us for our effort. (Fig. 21.)



Fig. 19.



Fig 19A.



Fig. 20.

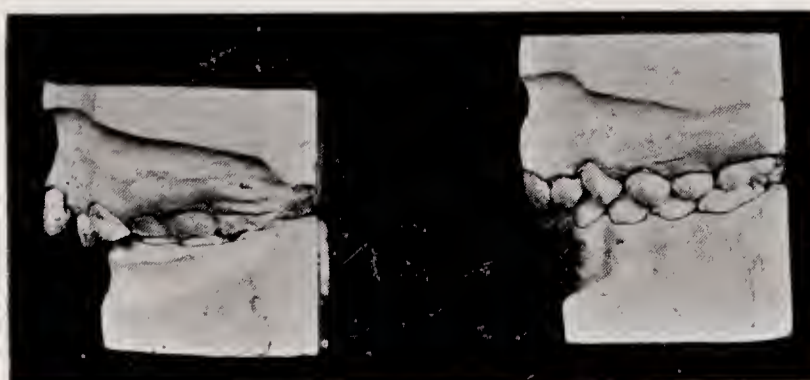


Fig. 20A.

There are, however, many cases in which an attempt to achieve a theoretical normal is unwise, impractical, if not in fact impossible, so we must abandon our first plan and work on such lines as may result in the maximum alleviation of those symptoms for which the patient attends for treatment.

Such treatment is in essence "Palliative," and consists in invoking what response there may be in the lower jaw (particularly in a vertical direction as this influences the height of the bite). At the same time upper intercanine expansion is performed, and when both have been more or less successfully accomplished, and not before, a pair of premolar tooth units is removed from the upper jaw; canines and later incisors being retracted to an appropriate degree. An actual subnormality of the maxilla is thus produced, but in so far as it comes to harmonise with the still subnormal lower, the æsthetic improvement is very noticeable—often masquerading as a cure in the lay estimation—whilst from the standpoint of masticatory function and dental health there may be little to choose between it and a normal dental mechanism. (Fig. 22.)



Fig. 21.

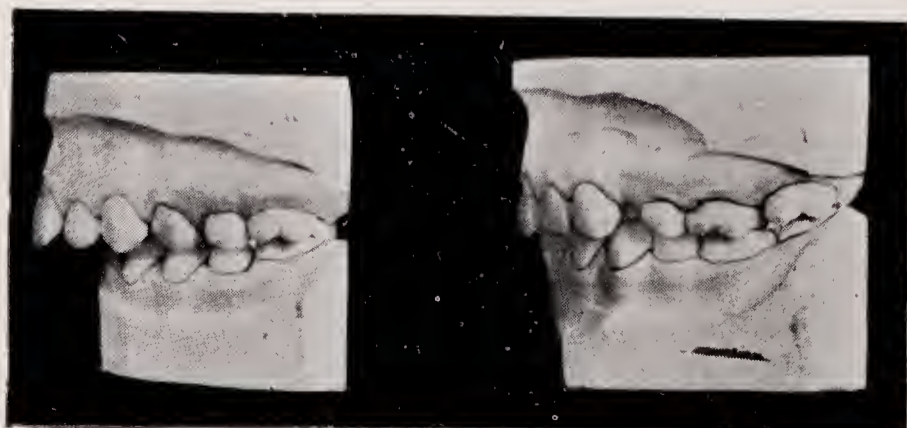


Fig. 22.



Fig. 23.



Fig. 24.

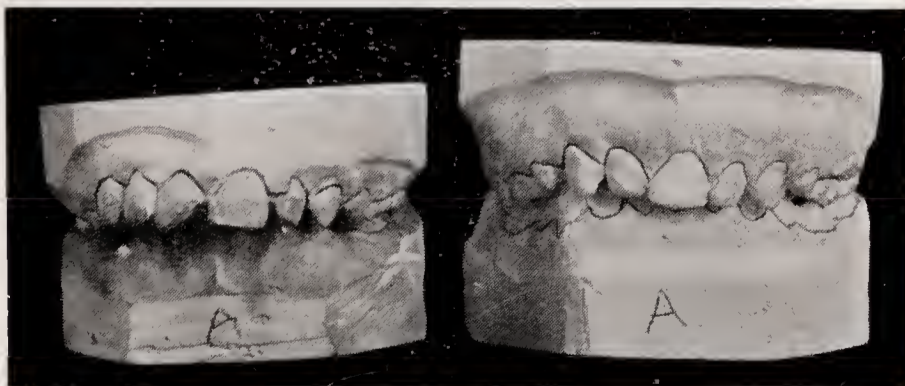


Fig. 25.

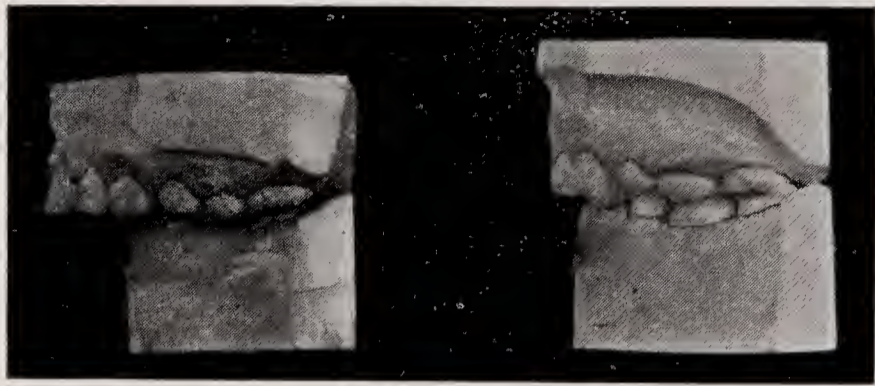


Fig. 26.



Fig. 27.

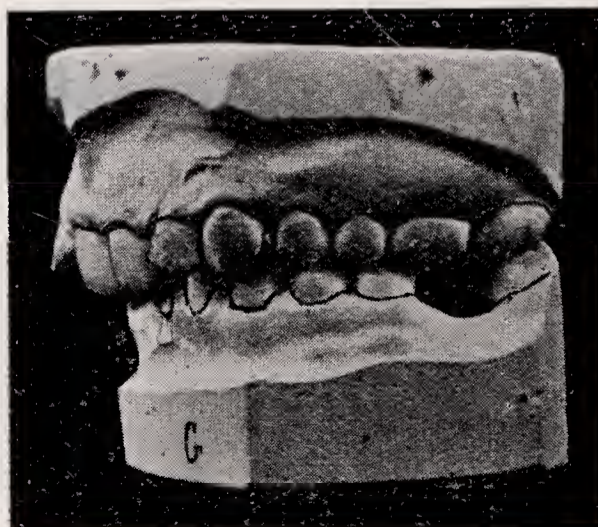


Fig. 28.

In certain instances the result so secured is, to the expert eye, rather inferior (Fig. 23), but in many cases the original condition may be so desperate that the successful completion of the case on "Palliative" lines may confer enormous benefit; the following is a case in point (Figs. 24 and 25): a gross Class II deformity is present with excessive overbite and marked encroachment on available space for the lower premolars. In addition the upper right central is fractured, the pulp having died and apical infection having supervened,  $\frac{4I}{4} \mid \frac{4}{4}$  were removed, the incisor space closed by

retraction of the remaining upper front teeth and the bite improved in the vertical plane. The right hand models in Figs. 24 and 25 show the improvement that resulted, whilst the improvement in the profile can be judged from a lateral view of the models in Fig. 26.

The general facial ensemble is now seen in Fig. 27, the ultimate step in treatment being the fitting of a jacket crown to the upper right lateral incisor so that the undue largeness of the left central incisor is minimised.

As regards division 2 of Class II (Fig. 28), the same principles apply with but the slightest modification, "Ideal" treatment will need the same attention to the lower jaw whilst intercanine expansion and advancement of the incisors will be required in the maxilla.

Furthermore "Palliative" treatment, if deemed worthy of adoption, will be similar to that of a division 1 case, except insofar as after extraction of the upper tooth units, the central incisors can be regarded as already in the retracted position, so that retraction of canines and laterals only will be necessary to bring about the desired result.

As regards Class III (Figs. 29 and 30) with its characteristic overgrowth of the lower jaw, the results of treatment are often so disappointing that for most of us the start on a fresh case is usually nothing less than the triumph of hope over experience.

The nature of the condition suggests that our treatment should be mainly directed on the mandible so that the chin cap and retractive head elastic worn during the earliest years can be considered sound treatment and more than one case has been published in support of the immediate benefit that can be secured. In later years mechanical intervention offers little hope of improvement and surgical methods of correction for severe cases can be considered within the bounds of practical treatment.

In the view of the general practitioner the main interest lies in how such cases—which are quite in a minority—can be clearly differentiated from those I have termed "division three" of Class I, and the distinction is of the utmost importance as these latter cases respond to simple treatment in the most exemplary manner. This distinction is, I think, made fully clear in my scheme of classification, and forms a practical example of its value in the therapeutic sphere. It is on this note, therefore, that I will conclude my remarks to-night, for I am aware that through them nothing new is added to our store of orthodontic knowledge.

In certain respects I have a feeling that the apparent lack of

interest in orthodontics shown by younger members of the profession is due in part to the precise academic atmosphere with which we, in all good faith, have surrounded it, and this lack of interest and knowledge can only be inimical to the skill and ability of those who will in due course replace us in practice. Either with, or without, our help the coming generation will inevitably make its own way, but with our help it will do it more quickly, so that in its more rapid advance, even we so may see a solution of those many problems which still perplex us.

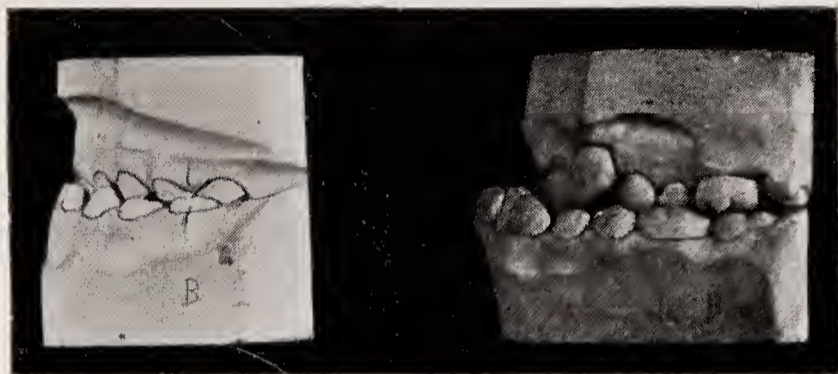


Fig. 29.



Fig. 30.

#### DISCUSSION.

The PRESIDENT said the paper was an unique and most interesting one, and it had obviously called forth from the author a large amount of ingenuity and originality. It covered an enormous amount of ground, and the author must have spent a great deal of time and trouble upon it. He thought the cinematograph film showed how very much more interesting than usual an orthodontic paper could be made.

Mr. HAROLD CHAPMAN said that he was beginning to feel very doubtful as to what the potentialities of bone growth were, that was to say, how orthodontists were able to effect it. He believed that bone growth did occur naturally, but whether it occurred as a result of

orthodontic appliances he felt considerable doubt. Therefore he agreed with Mr. Cutler in his extraction of the teeth in the upper arch in the Class I cases, but he was not quite so much in agreement with him as he might have been a few years ago with regard to the removal of teeth in the lower arch. He thought it was wiser to make sure of maintaining the size of the reduced upper arch by not running any risk of the lower becoming smaller, as it was apt to do when teeth were removed, and if it did become smaller the upper would become correspondingly smaller. He thanked Mr. Cutler very much for presenting such an interesting paper, so admirably illustrated.

Mr. A. T. PITTS said he had listened with the greatest possible interest to the paper and congratulated Mr. Cutler on a most original contribution. He found that he had been doing many of the things which Mr. Cutler advised, so that, just as M. Jourdain in Molière's play "Le Bourgeois Gentilhomme," found he had been talking prose all his life, so he found he had been a Cutlerite all his life; and so full of common sense were Mr. Cutler's views that he thought many of the other members must find themselves to be in that category. Classification intended as a guide to treatment must not, of course, be criticised from the point of view of ætiology or pathology. One might say that in a certain sense a classification as a guide to treatment alone might be an excessively dangerous thing because one might be tempted to assume that conditions looking the same but possibly having a different ætiology should receive the same treatment which might not always be to the advantage of the patient. He would like to ask Mr. Cutler why he omitted any reference to abnormalities in the transverse and vertical planes. They did not receive a great deal of consideration in text books, but many of them were very real problems from the point of view of practice. They did not fit so readily into the ingenious scheme devised by Mr. Cutler, but he thought it would have added to the value of his classification if they had been included. Whenever he read a classification he always liked to see what the writer was going to make of what were called Angle's Class II, division 2, cases, those Cinderellas of malocclusion, which received so little attention and about which so little was known, and he thought Mr. Cutler's classification was a little unsatisfactory in regard to them. Was it that Mr. Cutler was skating on thin ice a little consciously and got over the ground as quickly as he could? He thought it was absolutely essential to emphasise that these cases were primarily a maxillary retrusion with an associated inferior retrusion. Mr. Cutler said, quite rightly, that the ideal treatment was to bring forward the central incisors, but he had noticed that many of the cases came to orthodontists for treatment at a much older age than other varieties of malocclusion, probably, he thought, because the malocclusion tended to be cumulative. The typical case described by Mr. Cutler, in which the laterals jutted out so that their axes with the centrals were like the blades of scissors, tended to go on increasing but did not look bad in the early stages. He would have said that not more than 50 per cent. of cases of Class II, division 2, conformed to that type in which the upper centrals appeared to have been pushed back and the laterals to have jutted forward, the latter occupying a more correct position, in spite of their apparent projection, than the centrals. There was another large class in which it seemed as though the pressure, instead of being directed in the middle line, came from the side. Only the other day he had seen two such cases in hospital, following one another. In the first the pressure came from one side, so that the right canine jutted completely out of the arch, and the second case was the same, except that the pressure came from the other side. Such cases were extraordinarily difficult to treat, and he

thought it was necessary to carry out palliative treatment. He felt that Mr. Cutler might with advantage have said more about the treatment of that particular class of case. Mr. Cutler's method of showing the cases by the cinema was extraordinarily interesting. Mr. Hardy had used the method before, to show the possibilities of orthodontic treatment in cleft palate cases. He thought Mr. Cutler, in his paper and in his film, had given the members something which would be extremely helpful to them.

Mr. H. G. WATKIN said he had listened to Mr. Cutler's paper with very great pleasure. He had been doing a good deal of cinematograph work himself, and he therefore knew what a large amount of time and trouble must have been necessary to produce the result which Mr. Cutler had shown that evening. In one case Mr. Cutler said he had extracted two first premolars, one lower premolar, and then the lower right lateral. He thought Mr. Cutler must have had some special reason for the extraction of the lateral. With regard to Class II, division 2, cases, he agreed with Mr. Pitts that the normal treatment was to bring the incisors forward, and he found that in quite a number of cases it was an advantage to extract the upper 5's instead of the 4's. Mr. Pitts had mentioned the one-sided bite. He thought that in those cases, particularly when it was the left-hand side of the face, it would very often be found that the children were of the age to be doing arithmetic at school and rested their heads on their hands. When it was the right-hand side of the face, the children were often left-handed. He would like to ask Mr. Cutler whether in the Class II, division 2, cases in which he showed the upper bite reduced, he used bite-plates or hooks and a facial bow. He himself found wires and hooks very much more satisfactory than any bite-plate.

Mr. R. CUTLER, in replying to the discussion, said he knew that Mr. Chapman had misgivings as to the results of the extraction of incisors, but he thought that the possible dangers in the extraction of the lower incisor were very much less in purely Class I cases than they were in Class II cases, and if that treatment was deferred until a relatively late age the danger was even less. He quite agreed that if a lower incisor was extracted at the age of 7, 8, 9, or 10 there might be all kinds of difficulties resulting, but in a more established case of malocclusion, in a child of 13, 14 or 15, the position was rather more mechanical in nature, and he had found the removal of the lower incisor to be a satisfactory method of treatment. That bore on the point raised by Mr. Watkin about the extraction of the lower right lateral. The patient in question was 16 years of age when treatment was actually under way, and the lower right lateral was almost completely inlocked. As he did not wish to do any elaborate tooth movement—he had sufficient work to do in the upper—the removal of the lower lateral seemed to be the obvious treatment. The point, raised by Mr. Pitts about the type of classification was, of course a true one, indeed he heard most harrowing tales from students who had been roughly handled by Mr. Pitts in his capacity of examiner at the Royal College of Surgeons on this score! He protested, however, that abnormalities in the vertical plane could be shown most easily on his diagram. In Class II abnormalities he had shown how the closed bite effect could be quite well portrayed. He agreed that it was rather difficult to portray lateral abnormalities on his diagram. He was in complete agreement with Mr. Pitts with respect to classifications being dangerous when not based on ætiological grounds, but his classification was intended to bring home to students the essential features of the various established abnormalities. He did not think that he was doing anything new; he was thinking how the members

might get together and try to make the matter more clear to students. Mr. Pitts knew the state of mental confusion in which students often found themselves, which was not in any way helped by a strictly scientific classification. One talked about post-normal lower jaws and cases of inferior retrusion, which to his mind was wrong, because the expression "inferior retrusion" suggested that there was a pulling back. No lower jaw could be pulled back further than it already was ; but it did often show an inability to grow forward. The student got an idea that it was behind the position in which it ought to be and that therefore the right treatment was to pull it forward into a state of permanent "pulled-forwardness," which was quite wrong. It was sometimes heartrending to see a student examine a case. He rushed up to it and tore the lips apart and viewed the occlusion of the molar teeth and said it was Class I on one side, and then, with a low moan, he found it was Class II on the other side, so that he would not know whether to call it Class I or Class II, whereas a look at the patient's face and the general harmony of bone would tell him immediately that it was a purely normal case with simple abnormalities in tooth position due possibly to early extraction. That was the kind of thing which his classification was designed to help ; he intended it to be a means of bringing home to the student the essential features of established abnormalities. He felt that students were greatly in need of that, so that if they saw a Class II case they could visualise at once what was at fault. He thought the diagrams he had shown were an easy way of making those points clear. Then there were the unilateral cases, where the centres were out of line. Angle described them under a sub-division heading. None of those could of course be portrayed on the very rough and simple scheme that he had brought forward.

With regard to Angle's Class II, division 2, he thought he had given those cases as much attention as he could give them in the short space of time at his disposal. He agreed that they varied rather in their characteristics and sometimes they were extraordinarily difficult to treat. Sometimes one decided to treat a Class II, division 2, case on palliative lines and so removed the upper temporary canines and retracted the laterals a little and warned the parents that the extraction of two units in the upper jaw might be necessary later, and then one found, much to one's embarrassment, that there was room for all the teeth, and one got a sort of normal-abnormal state of stability. There were many other points with regard to Class II, division 2 cases which were of interest. He had very decided views on the ætiology of those cases, but the present occasion was not the time to discuss ætiology. He thought that Mr. Watkin's suggestion of extracting the 5's instead of the 4's was a very sound one. He had always been a little worried about doing that, for fear of lessening the anchorage of the six-year-old molars ; he felt that if he had the 5's in front he had a more stable anchorage with which to work on the front of the mouth. He agreed with Mr. Watkin in thinking that the facial bow was an advantage.

# Entire Lack of Occlusion of Molars and Premolars\*

By B. BANE, L.D.S.

IN November 1934 I was handed a pair of models of a boy aged thirteen years four months, together with a "squash" bite-block, by the brother of the patient in question. These had been forwarded to the latter by a Capetown dentist. The upper left lateral incisor had been extracted because it had become abscessed. I was asked if anything could be done to improve the enormous open-bite in the back of the mouth. Figs. 2 and 3 show these models as I first saw them and Fig. 1 is a photograph of the boy taken prior to November 1934. You can see that there is an enormous open-bite in the region of cheek-teeth on both sides.

I showed the models and photograph at the time to Miss Smyth, and at her suggestion wrote to the Capetown colleague advising that the boy be instructed to chew on a hard rubber object, somewhat larger than the height of the space between the teeth when the mouth was closed. The object of this was, of course, to attempt to stimulate the bone growth in a vertical direction around the functionless teeth.

I heard no more about the boy until recently, when, upon communicating again with the dentist, I received another pair of models complete with "squash" bite-block, which I had articulated and which are shown in Figs. 4 and 5. I was amazed at the enormous improvement on the right side, and although the left side was still very much open, I could see a decided improvement here also. In a letter accompanying the last models the dentist tells me that he put the boy on to chewing gum and strictly emphasised the necessity of constant chewing on the back teeth.

An interesting point about this case is that the result achieved has been brought about by a method which is not applicable in every-day practice of "opening the bite." In the latter case if one inserted a plate which, in the first place opened the bite on the cheek-teeth to the full extent ultimately required, one would, in the majority of cases, fail to produce any physiological over-eruption.

The ætiology of this case seems rather obscure, and here I would welcome the opinions of the senior members. To me, the photograph shows that the boy has a somewhat protruding chin. This is confirmed by the brother, who also states that a further striking feature is that he has a very large head, in proportion to the size of face. Another brother whom I have seen two or three times, definitely has a determined chin. This characteristic is, however, not present in the parents. There is no history of sucking or other habits. Taking these facts into consideration and the fact that the lower arch is generally large in proportion to the upper one, would one classify the case as inferior protrusion? (Angle's Class III.)

\* Read before the Society, November, 1936.

FIG. 1.



FIG. 3

FIG. 2.

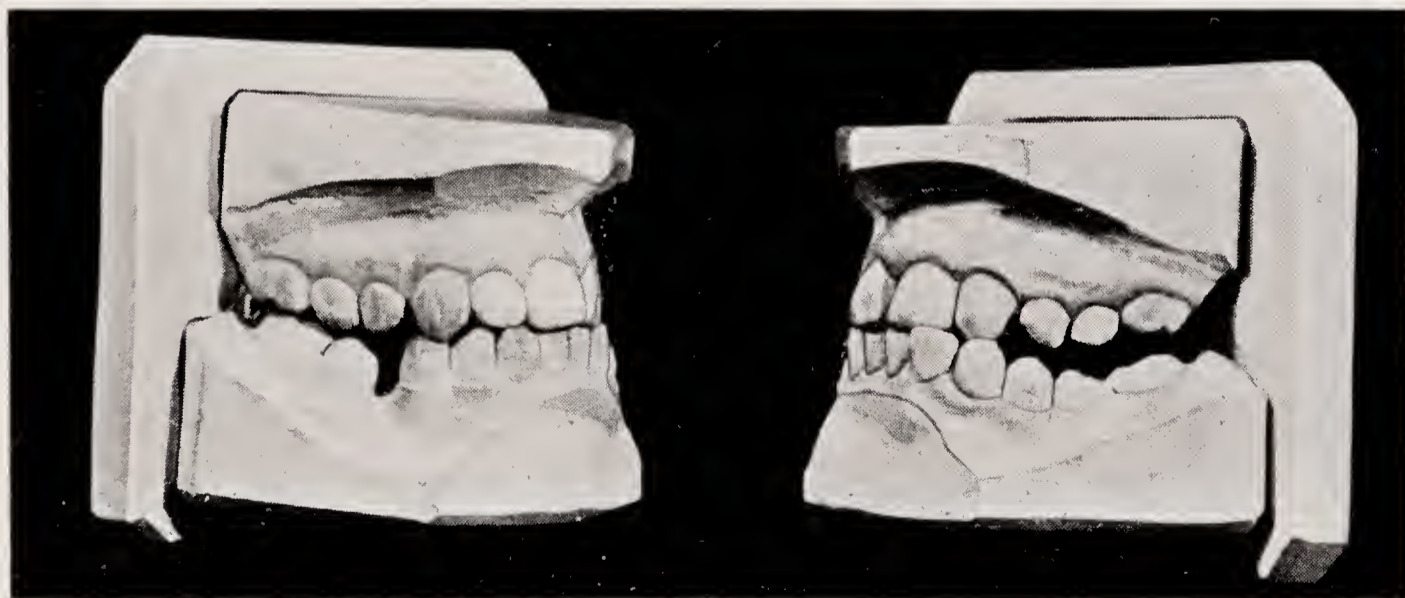
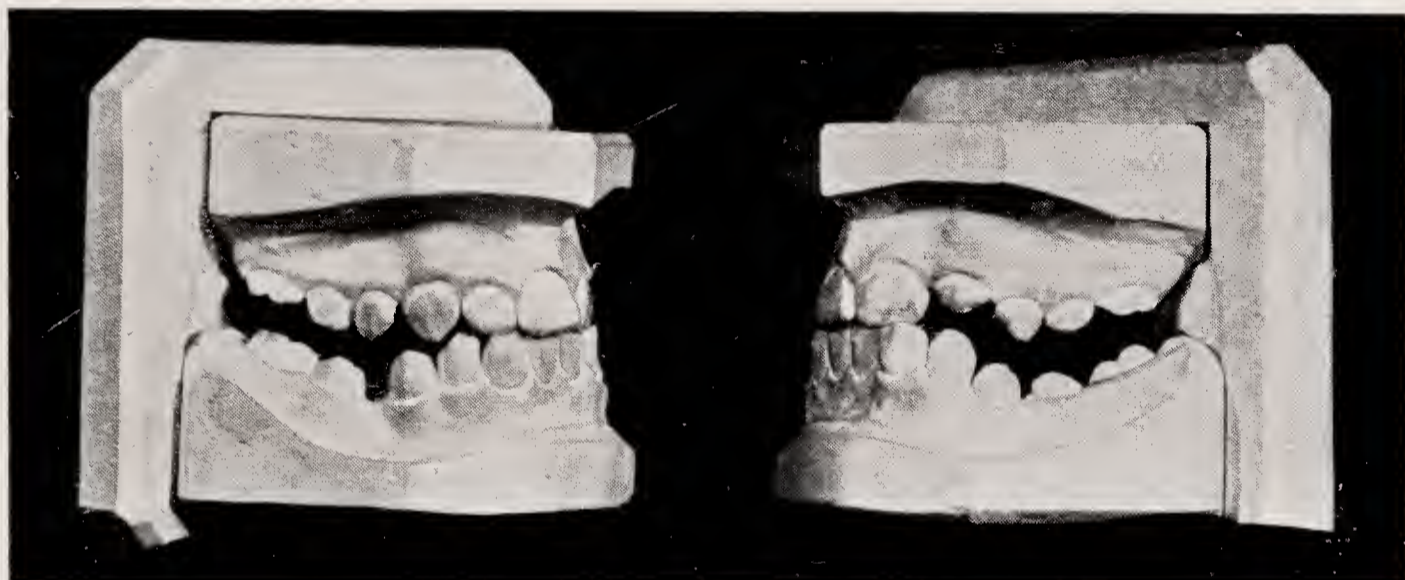


FIG. 5.

FIG. 4.

#### Discussion

The PRESIDENT said he would be interested to hear what members had to say about the case described by Mr. Bane, and he would be particularly interested to hear opinions as to whether the improvement shown was really due to the chewing exercises that had been carried out or whether it was due to a further eruption—perhaps a delayed eruption—of the teeth themselves. In the second slide the teeth certainly appeared to be much longer than they were in the first slide.

Mr. HAROLD CHAPMAN said it would be interesting if Mr. Bane could say why there was a space between the two lower premolars on the right side.

Mr. BANE said he had no data to show whether the teeth which were present were second molars nor did he know if the lower first molars had been extracted. Looking at the models, he would say that they had been, because the teeth looked rather like lower second molars.

Mr. CHAPMAN said it appeared as if the first permanent lower molar on the left side had been removed, but one could not tell from the slide whether that was the case on the other side. He remembered having a case very similar to that which Mr. Bane had described. There was no occlusion of the back teeth, although there was of the incisors, and he suspected that the trouble was due to the tongue lying between the upper and lower cheek teeth. He adopted one or two unusual devices to see if he could keep the tongue out of the way, but they were not successful, and whilst the case was in his hands there was no improvement whatsoever. Curiously enough, he had that day seen a child who had considerable open bite of the upper lateral canine, first premolar and first permanent molar on the right side. It looked as if the surfaces of the occlusal upper teeth formed an arch which was concave towards the crowns of the teeth. There was an unusual factor in this case, namely, the second upper premolar had not erupted at all. Its occlusal surface could just be seen between the approximal molar and premolar, on a level with the gum. It had probably been in that condition for a year or more. He was keeping the space by means of a plate which was arranged so as not to interfere with the eruption of the premolar. It seemed to be a case of what the French called *désinclusion*. It would be interesting to know the ætiology of such cases. The one to which he had just referred made him wonder whether there was a lack of development of the antrum, because the trouble seemed to be entirely in that area, except that the first permanent molar was in position. In another case in which a first upper premolar was in question, the other teeth were in occlusion. It was very interesting that Mr. Bane's patient had been given exercises to do, but unfortunately it could not be proved that the treatment had brought about the improvement that was shown—that it was a case of *propter hoc* and not merely *post hoc*. The fact that the condition was better on one side and not on the other seemed to add to the mystery. The case was one of great interest.

Miss L. CLINCH suggested that the lower molars might not have been extracted: they might never have been present. She had had a case, very similar to that which Mr. Bane had described, in which the central incisors were edge to edge but in which there was no molar occlusion, and in this case there were two first permanent molars absent. She had another case of open bite in the molar region with a very close bite in the incisor region, and in this case all the premolars and third permanent molars were absent.

Mr. B. BANE, in replying to the discussion, said the President had suggested that the case had probably cured itself by the teeth erupting further. The only thing he could say against that was that it seemed to him that, if the teeth were to grow down to their normal position, one would expect a certain amount of bone to be deposited underneath them, and it was not mere eruption or protrusion of the teeth beyond the soft tissues, as would be the case if those teeth were just erupting further; it definitely looked as if bone growth had occurred around them. With reference to Miss Clinch's suggestion that possibly the molars were absent, he did not know whether that was so or not. As he had said, it had been rather difficult to obtain any information at all about the case. He had never heard of missing first molars, but he supposed it was a possibility, since it was common knowledge that other teeth might be congenitally absent.

# FOREIGN ORTHODONTIC LITERATURE\*

By LILIAN LINDSAY, L.D.S.Edin.

THE two Communications at our last meeting, dealing on the one hand with heredity and on the other with an attempt to classify cases with a view to simplification of treatment, brought to my mind the very pertinent remarks of Hrdlicka, who said that it was necessary to take an anthropological view of the jaws and teeth, and for this he brought forward three reasons :

(1) That the jaws and teeth are not the same, but only co-ordinate entities of different embryological derivation, that their unity is really but a kind of symbiosis or intimate co-operation. Thus the jaws may vary independently of the teeth.

(2) Different parts of the jaws, whether maxilla or mandible, may vary in their separable constituents or dimensions—for instance, the chin is distinct from the body of the mandible, this from the ascending ramus, and this again from the notch or the condyle. Every feature has an individuality of its own ; the basic correlation of different parts may be influenced and altered by factors acting directly or strongly on one or more of these.

(3) The teeth, in the times of their eruption and in the make-up, such as cusp, enamel, roots, blood supply and innervation and in every other particular, show an individuality in these separate parts.

How little we know about these things and how impossible it is to standardise and classify, is forced upon me when I read the studies of such men as Bustin and Oppenheim.

Bustin has once more published X-ray studies of the permanent tooth germs lying under the deciduous dentition. For the past two or three years I have drawn the attention of the Society to the work done on the Continent on X-ray studies of the deciduous dentition. Last year, Bustin, it will be remembered, showed that

\* Read before the Society, November, 2nd, 1936.

expansion of the deciduous maxillary arch at the age of six years had no effect on the germs of the permanent canines lying high up in the jaw. Since then, the same author has made a further communication on his subsequent X-ray studies with a warning that these may be misleading for diagnostic purposes in the absence of clinical observations and comparisons as to growth rate of the individual patient. This shows the importance of taking X-ray photographs of the same patient at different ages, in order to gather some idea of the individual growth idiosyncrasies, and to prognosticate accordingly. The movements of the germs of the permanent central incisors are of especial interest. In one case there was a gap between germs, the laterals lying deeply, but not against the floor of the nose ; as the shadows of the centrals were lying over these, it is regarded as a sign of underdevelopment of the premaxilla. The lateral germs were rotated. A photograph taken two years later showed the central germs close together ; the laterals close to the floor of the nose and only slightly rotated.

a.

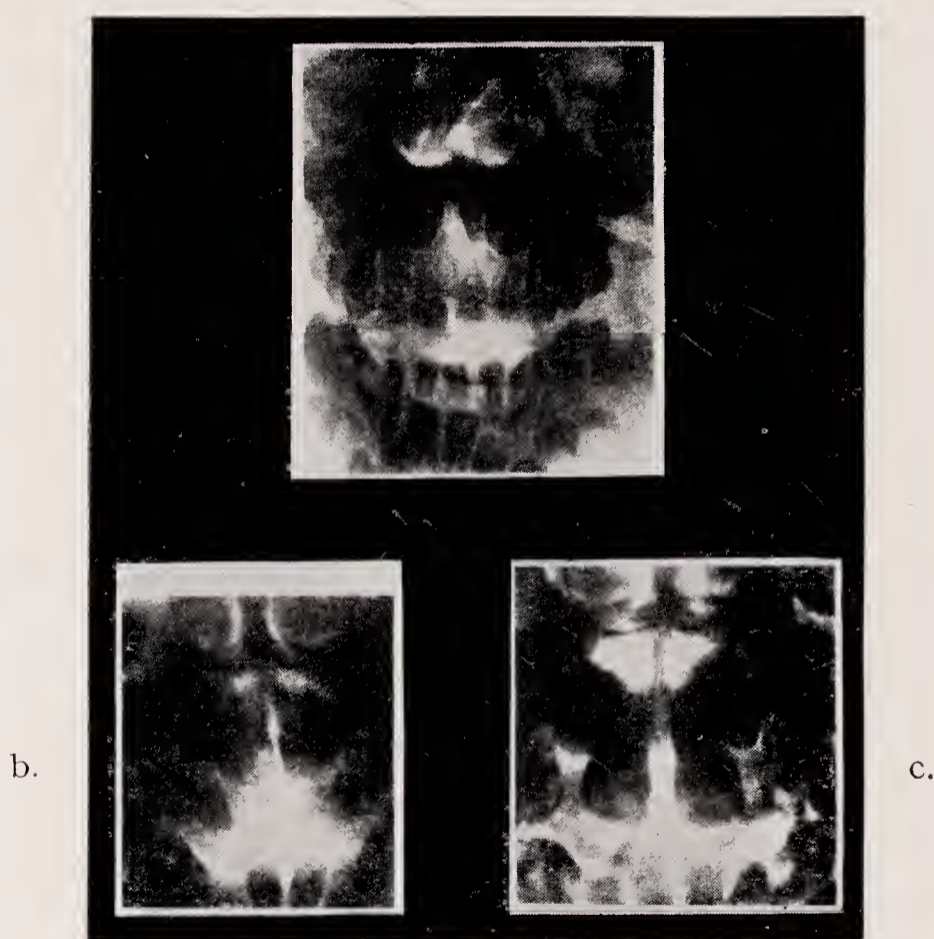
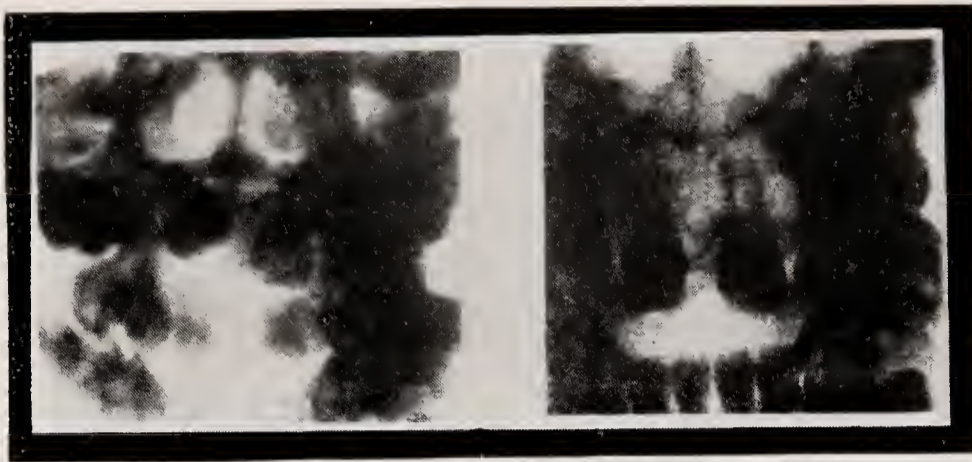


Fig. I.

On eruption, the centrals once more returned to the condition shown in the first picture, that is, with a diastema. Can this be explained by the retention of the original position of the germs as they were first laid down, or is it the result of growth processes originally beneath the floor of the nose where there was plenty of room. As they come downwards into the alveolar region of the apex of the milk teeth, the room is constricted and they come together to diverge once more in eruption. Another perplexity is the change in the rotation of the laterals from a sagittal to a more frontal position ; this had some effect in the room for the centrals.



a. Fig. II. b.

Another effect of the abnormal position of the teeth germs is the kinking of the root in a case where the central germ close under the floor of the nose is greatly rotated. Beneath it is seen the line of the crypt, a mirror picture of the position of the germ of the opposite side. Bustin does not explain this, but suggests that it might have been due to trauma causing œdema of the tooth sac. As the apex of the milk central showed a normal contour, it is not likely that infection was the cause. This central, in the process of eruption, went through a considerable degree of rotation, and taking the apex of the root as a fixed point, the movements caused a kinking to take place. Thus, in spite of its abnormal position in the early stages, the tooth erupted into a normal position.

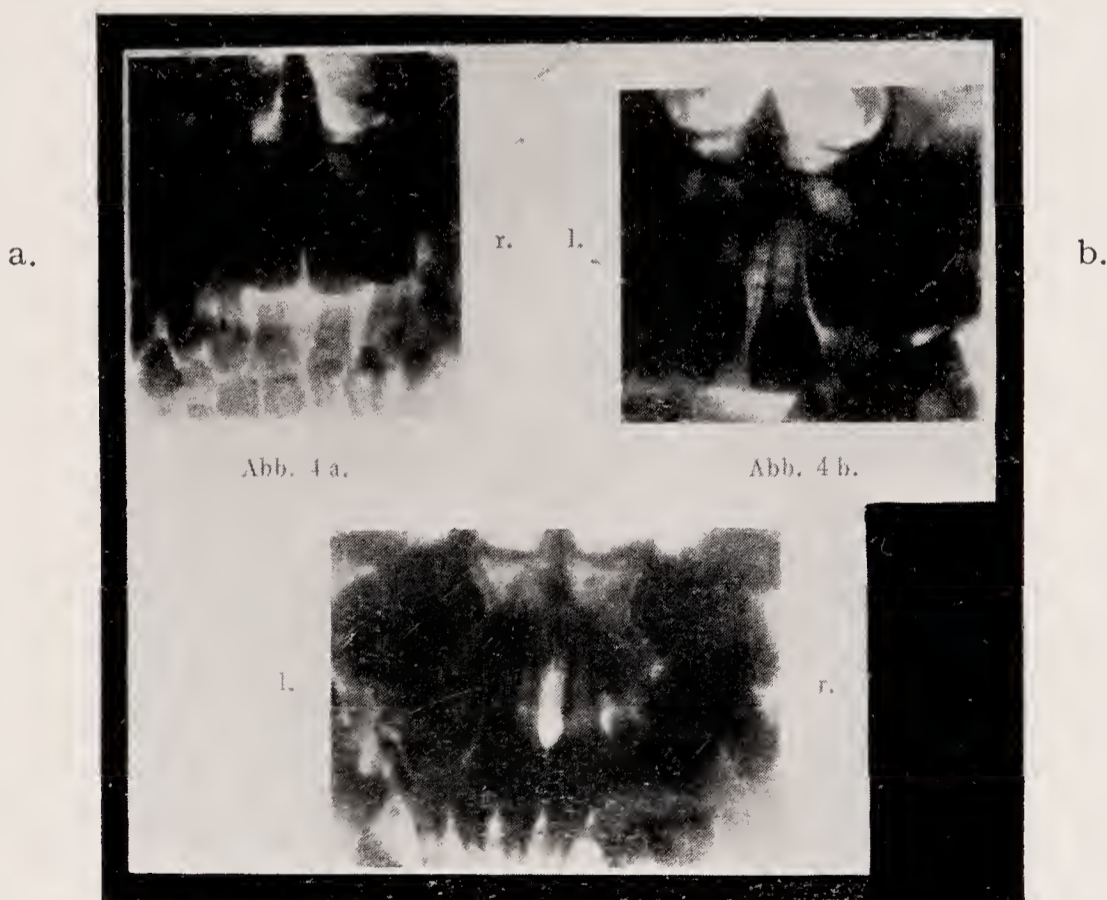


Fig. III. c.

Again, the originally good position of the germs in the jaw may be affected by adverse conditions in the mouth, as for instance in a case of rickets. The first pictures show an almost frontal position of the laterals. The median line of the cranium lies exactly over

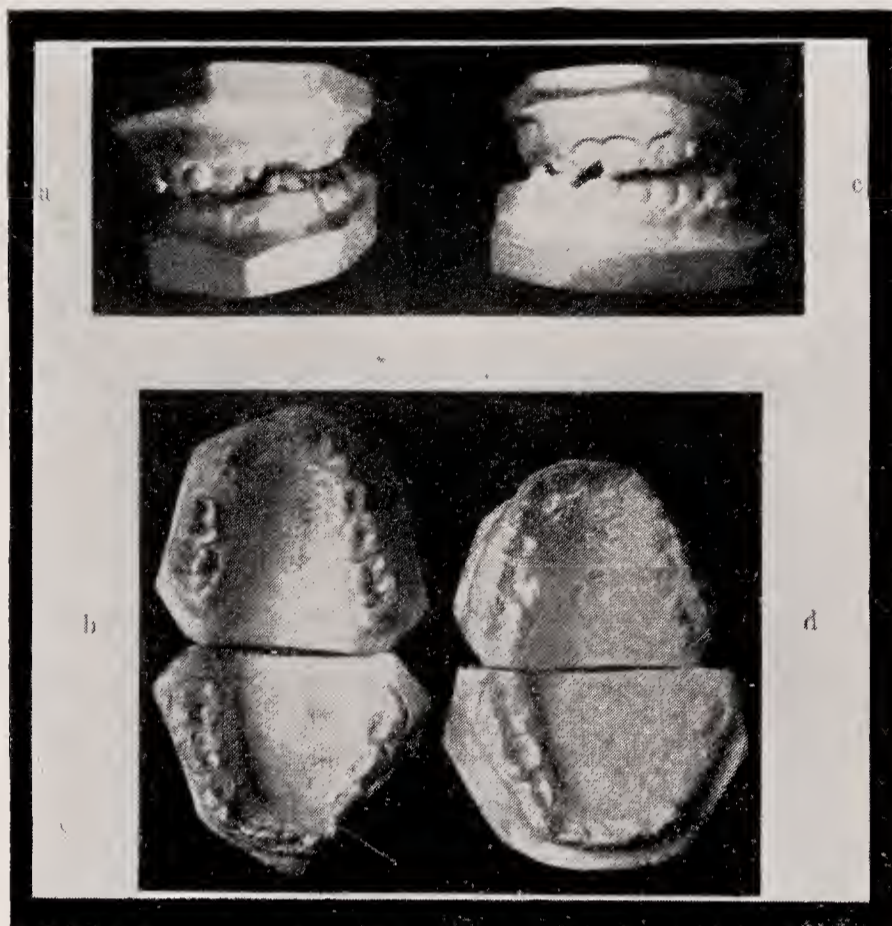
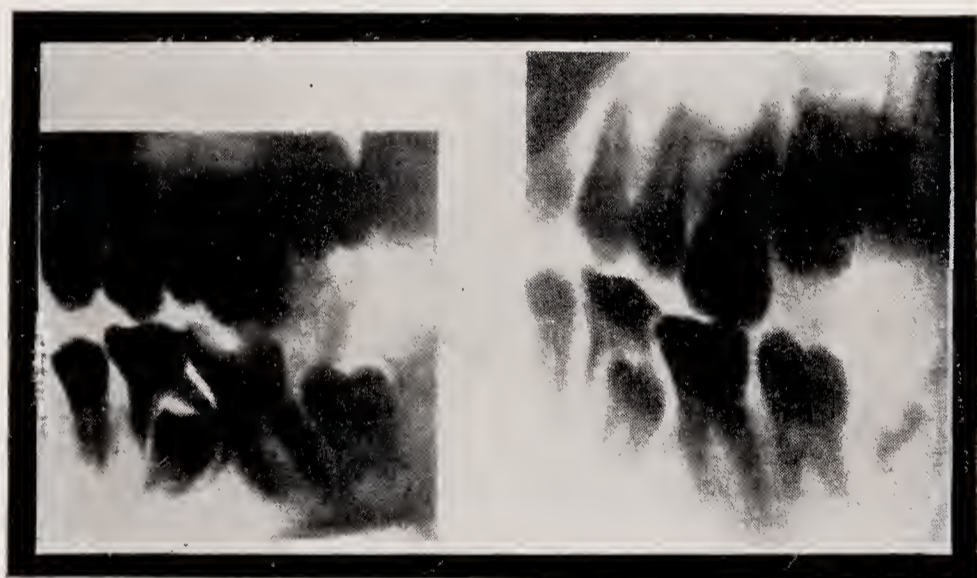


Fig. IV.

the centre of the dental arch. The septum is straight. The centre of the mandible is deviated. Two years later, the position of the laterals has deteriorated; one of them is almost sagittal. The symmetry of the maxilla is as before: the locking of the bite has had no effect on the apical base. The symmetry of the maxilla has been maintained by increase in the breadth of the jaw in spite of the cross-bite. The result of the destruction of the crown of the IV(D), the rate at which the 6 has drifted forwards, can be estimated—that is 1 mm. per annum. There is a remarkable improvement in the condition of the lower jaw, and that is the improvement in the imbrication of the incisors and a widening of the arch. Thus there may be in the course of growth an impairment in position. In this case, in spite of the cross-bite, growth has proceeded symmetrically. There would appear to be a retardation of half of the mandible which has been caught buccally by the bite.

The tilting of premolar germs may be influenced advantageously during growth, becoming more vertical if there is enough room in the jaw. The tooth germs drift in the jaw, as instanced by the drifting forwards of the  $\overline{8}$  at first with a space between it and the  $\overline{7}$  later close to it. These cases tend to prove that there is a changing position of the germs in the jaw bone. Should the original position of the germ when laid down be unfavourable, judging from these cases it may improve, and the final position in the arch may not be the original position of the germ when laid down. Therefore, if the X-rays show a germ in an abnormal position, it does not necessarily mean that the final position in the jaw will be a bad one, the abnormal position may disappear.

Fig. V.



a.

Fig. VI.

b.



Fig. VII.

The diastema so frequently observed between the centrals, is considered by Iwagaki in a study of the progressive changes in both dental arches during childhood. He found in the number of children examined between  $6\frac{1}{2}$  to  $7\frac{3}{4}$  years, that whereas 20.8 per cent. of the centrals erupted without a diastema, 54.2 per cent. had such a gap. At the next examination, six months later, that there had been a diminution of the space in all the cases ; in 75 per cent., the closure was complete, while a very small proportion remained, 8.3 per cent. He claims from these results that the diastema between the permanent centrals, especially soon after eruption, may be regarded as a constant feature which will right itself later. This is interesting in conjunction with the report of Bustin and his suggestions as to the position of the germs as laid down in the jaw. Iwagaki's figures, as to the irregular position of the lower incisors on eruption, are comparable with those of Bustin. Iwagaki states that 87.5 per cent. of the cases examined showed overlapping, 81 per cent. of these improved, 35 per cent. completely, 17 per cent. showing only slight improvement, while nineteen remained as they were. Again he states that eruption in an irregular position cannot be regarded as an anomaly, and he refers to Bustin's X-ray researches in which the germ is not laid down in a straight position but is rotated more or less, and a compensation occurs as the growth of the jaw that brings the tooth into eruption. Iwagaki questions the statement that early loss of the milk teeth causes malocclusion, since only 30 per cent. of the children examined by him showed a drifting forward of the first molar, which was confined to the mandible, and that this must have occurred before the sixth year. As a result of his measurements he states that the dental arches do not develop concentrically but in an irregular manner, the increase in growth of the maxilla being greater than that of the mandible ; and the reason, he considers, is that the lower first molars, from the anatomic form of the mandible, are more inclined to drift forwards than the upper molars.

The once-accepted changes of the tissues incident to tooth movement, so often shown and described or referred to at meetings of this Society, are now revised and reversed by Dr. Oppenheim's latest work, which appeared to me devastating. He begins by stating that his latest experiments show that the results on human material do not tally with those from animal material ; and therefore the conclusions drawn from his earlier experiments cannot be applied without reservation. He removed certain teeth by the surgical method in order to obtain the surrounding bone and soft tissues. These had to be removed because of lack of space, due chiefly to the drifting forwards of the cheek teeth, closing the space for the canines. These teeth had been treated orthodontically by various appliances previous to their removal. By the ordinary Angle expansion arch, gold-platinum alloy 0.80 mm. thick ; by a straight spring soldered to the arch ; by a spring on the lingual arch, not secured in its position ; by a closed loop spring. Some teeth were allowed to resume their original position, others were retained for a certain time in their new position, the retaining appliance then removed and left alone for weeks or months. Four

teeth crowded out were removed after two years' treatment. Two had been treated with the lingual arch, the other two with the expansion arch. In the first case shown, a girl of thirteen, the appliance used was an Angle expansion arch 2 mm. away from the tooth ; after ligaturing, treatment was interrupted for ten months, then resumed, ligatured alternately on seven and fourteen days, until the tooth was within 1 mm. of the arch wire ; the whole period lasted six weeks ; the tooth was ligatured four times and then released and for seven weeks previous to the time of removal was allowed to relapse to its original position. The measurement of the movement was 2 mm. The entire time, forty-four days of elastic intermittent force succeeded by forty-nine days without any appliance. The relapse was without occlusal influences ; absorption of the cementum was taking place during six weeks ; between these points, there is normal cementum. Under higher power, there is seen that at the part about the alveolar crest, thick layers of secondary cementum have been laid down ; above this, there is normal cementum ; at the place where pressure was being felt there is a second absorption with a deposition of secondary cementum. The whole length of absorption is 4.88 mm., which is about half of the entire length of the root.

Since orthodontic movement in whatever direction, involves a tilting of the apex of the root, there are absorptions there ; one place is in a stage of full repair. In the intraradicular cementum, in the area of pressure, there is no injury : this is exceptional. The alveolar crest has disappeared as a result of active treatment, and no longer reaches the lower border of the absorption ; this is proved by the fibres between the periodontium and cementum being still intact. There is reconstruction of the bone as a result



Fig. VIII.

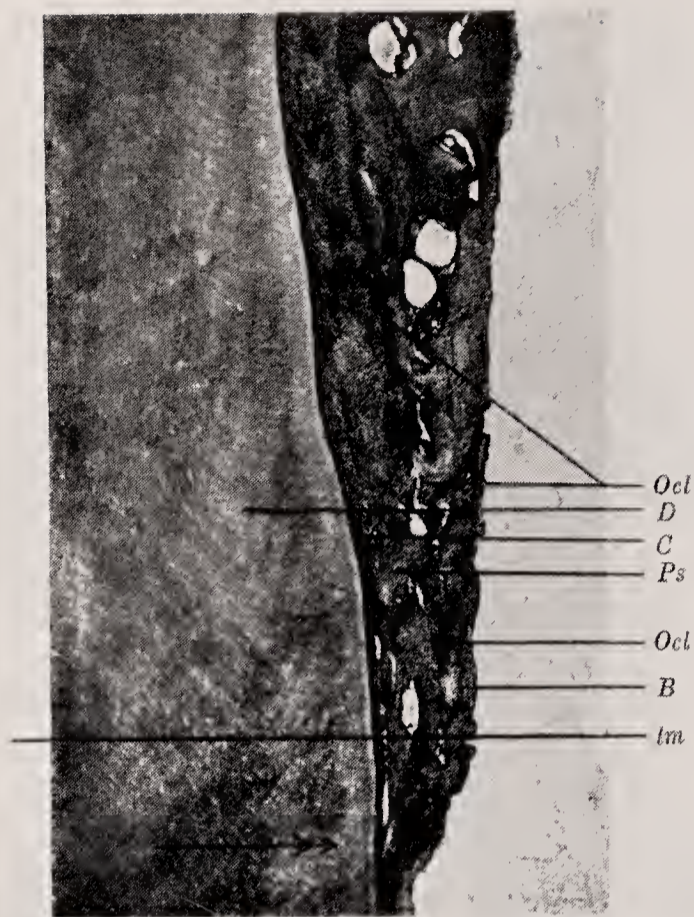


Fig. IX.

of the period of relapse. Osteoid seams appear with osteoblasts. Contrasted with the lingual wall which in the return movement was the side of pressure, where are shown lacunæ with osteoclasts. In the first instance, this was the area of tension where osteoid tissue was formed which disappeared when the reverse movement took place. There is no trace of any effect on the cementum so that this picture may be regarded as almost biological in its features, for there has been no alteration in the width of the periodontal space. When the forces used are gentle and intermittent, the

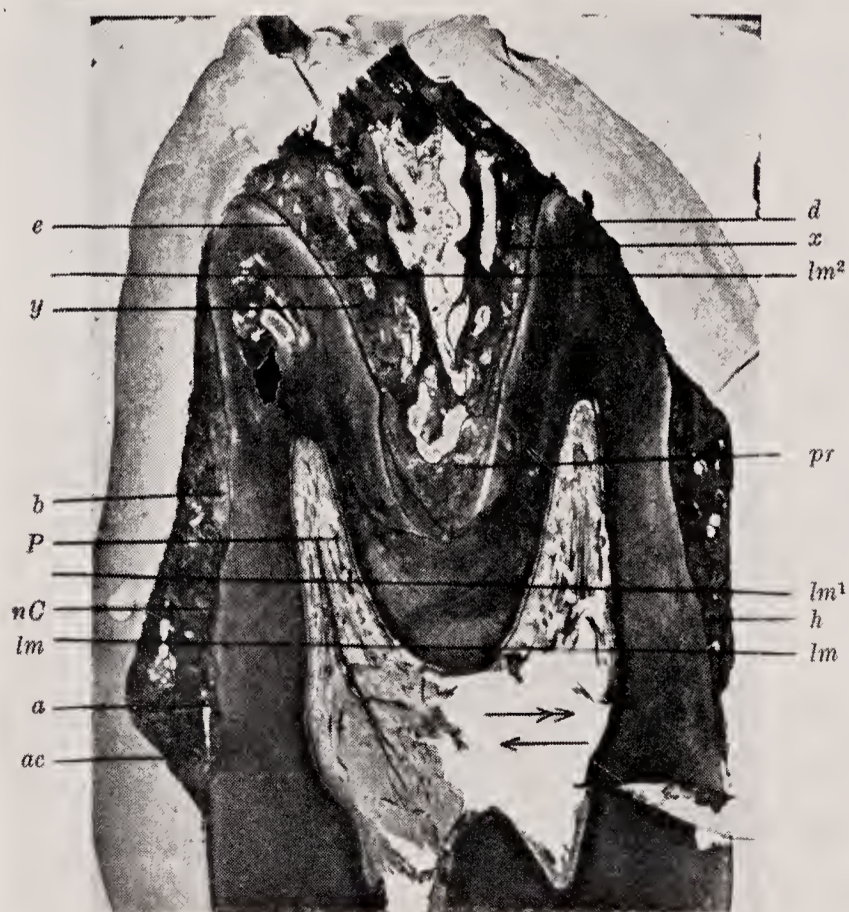


Fig. X.

periodontal membrane recovers and the blood supply is re-established.

Nevertheless, in this case, although the return movement or relapse took place under such favourable conditions, it was at a faster rate than that of normal movement ; this is shown by the increase of the vessels within the septum. This, Oppenheim regards as the provision of a buffer against pressure—an attempt at protection which also favours absorption of bone or osteoid. That is the reason he lays emphasis on “almost,” for in a true biologic movement there would be no increase in the number of vessels, either on the pressure or traction sides. In spite of the six weeks interval between the last application of force and the removal of the tooth, there are notable changes in the pulp where the vessels have increased ; there are injuries to the odontoblasts caused by the vacuoles.

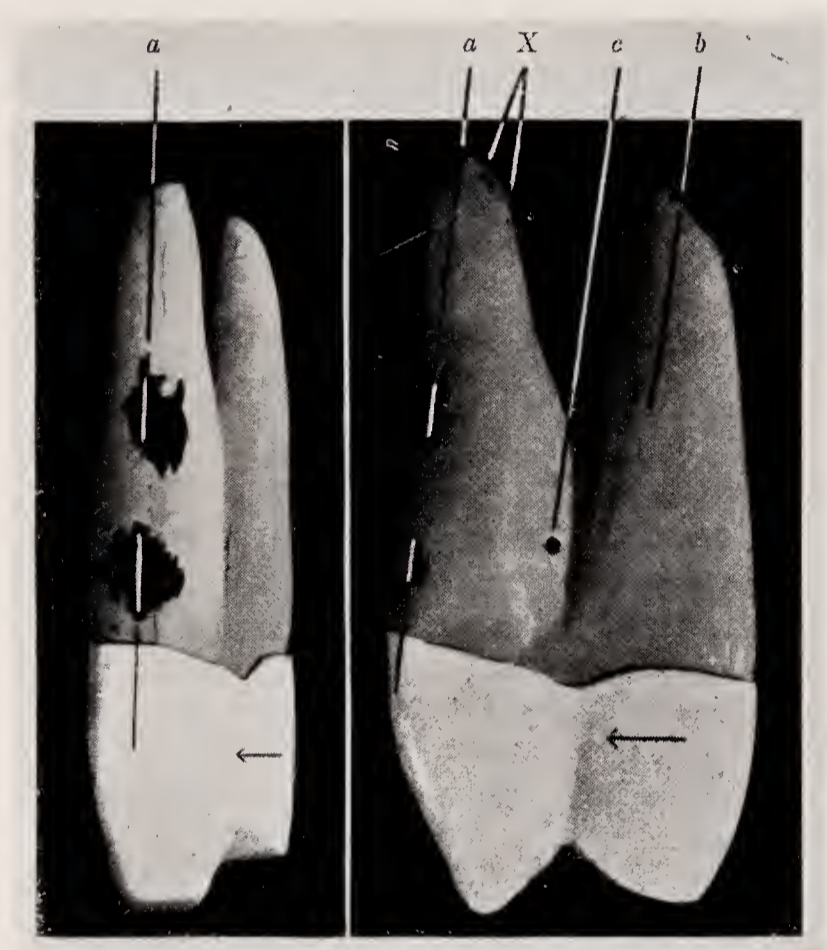


Fig. XI.

To make this evidence more impressive, the various microscopic slides were reconstructed into models by means of layers of paper covered with wax, cut out according to marked outlines traced from images projected by means of a mirror adapted to the ocular of the microscope. These sheets were superposed and stuck together by means of a hot knife. The models from the case just described show the cementum absorptions which look indeed formidable.

The next case is a girl of 16 ; lower left bicuspid. The appliance used was a finger spring 0.50 mm. thick and 8 mm. long, soldered to an Angle expansion arch, exerting a tension 2 mm. in a lingual direction. After four and half weeks continuous force, retention was applied by a lingual wire connected to the bicuspid on the opposite side. After eleven weeks, this was removed, and the tooth

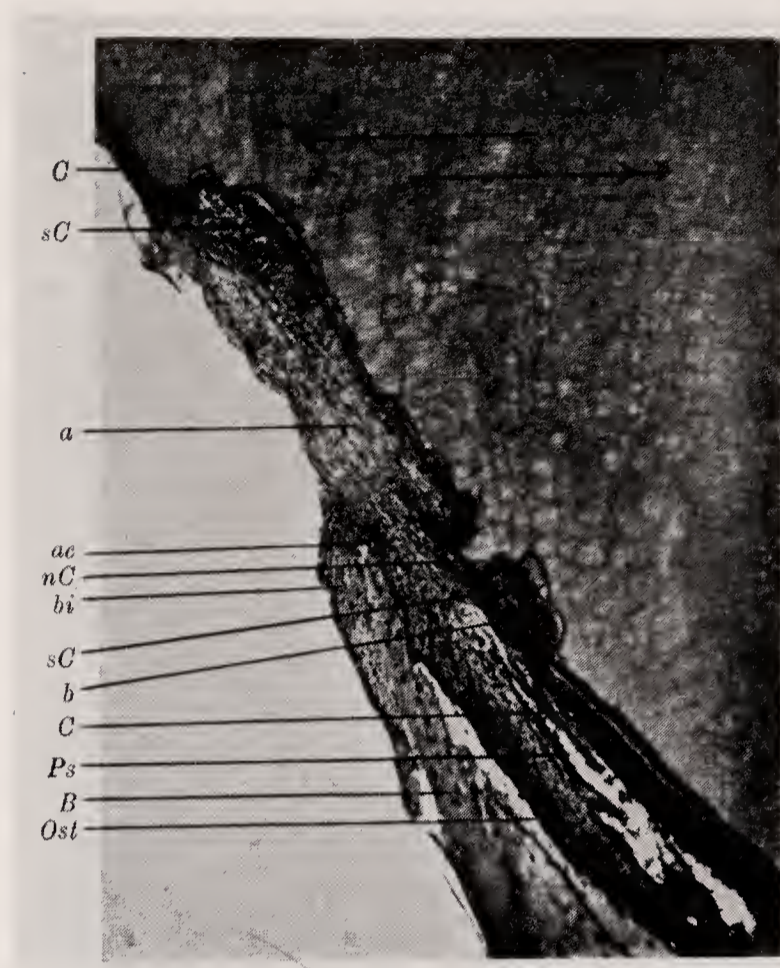


Fig. XII.

allowed to relapse during four and half months. As a result, the pictures show advanced repair. The return to original position was not like the former case without occlusal interference, but under such forces the alveolar crest has disappeared. It appears that it was not possible to decide whether this was due to "jiggling" during the first application of force. The primary cementum absorption is separated from a larger patch by a narrow bridge of normal intact cementum. The bone on the inner wall of the lingual side shows lacunæ and osteoclasts; the deposition of osteoid has taken place during the relapse. On the buccal side the alveolar crest lies considerably below the absorption; the ligaments are still intact. The osteoclasts present show that the absorption occurred during the relapse by the pressure of the tooth against the crest. On the side of the bone facing the tooth, there is a layer of osteoid developed during the original movement, but during the relapse is being again absorbed, shown by the osteoclasts present. The cementum remains intact at this point.

In the region of the root, the primary apical absorption is shown. The primary absorption shows a more advanced stage of repair than the secondary. The bone shows little trace of reconstruction or marks of absorption during orthodontic treatment, unless the enclosed vessels are evidence of this. The influence of occlusion is shown by absorption and its corresponding absorption at the apex which started after removal of the retention, that is the reason why healing is less advanced, being more recent. There are depositions of secondary cementum. There are two other places where absorption is active from the same cause.

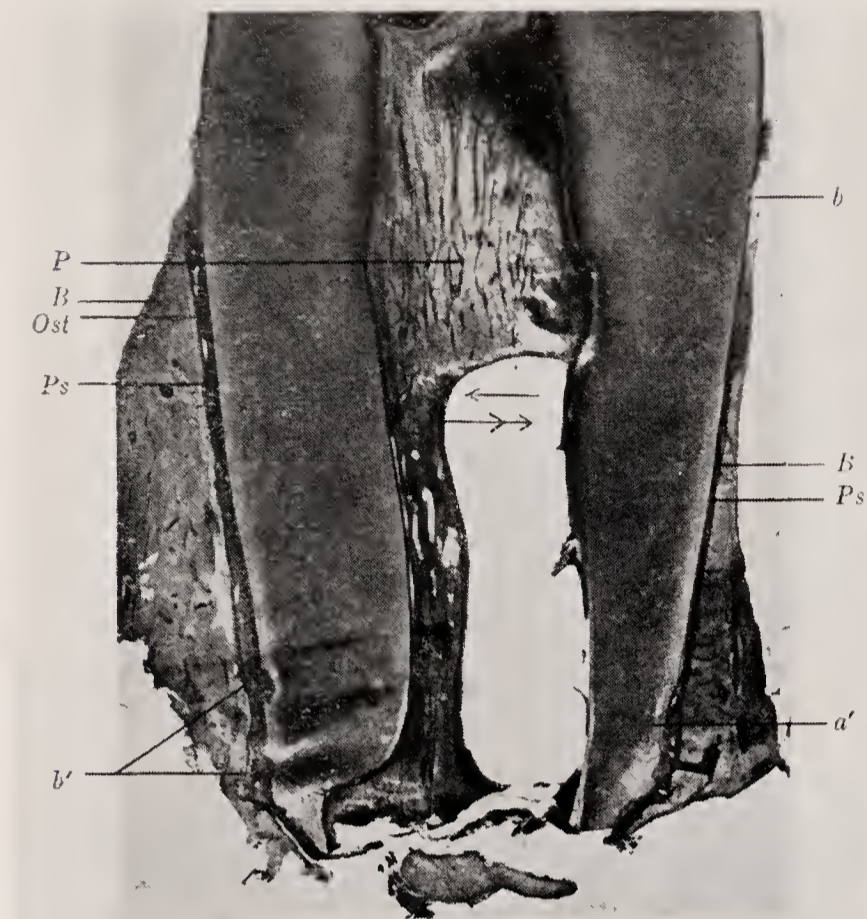


Fig. XIII.

Attempts are always made by an effort of nature to keep the periodontal space as narrow as possible ; if this should be enlarged, by osteoid or, as this filling-up must be as rapid as possible, by a bowing of the bone or by cementosis, these efforts are sometimes quite peculiar : the bone may be pushed into the space made by a deep absorption. This consists of newly formed bone separated from the old bone by a border line sharply defined ; the new bone is framed with osteoid tissue with a fringe of osteoblasts. This

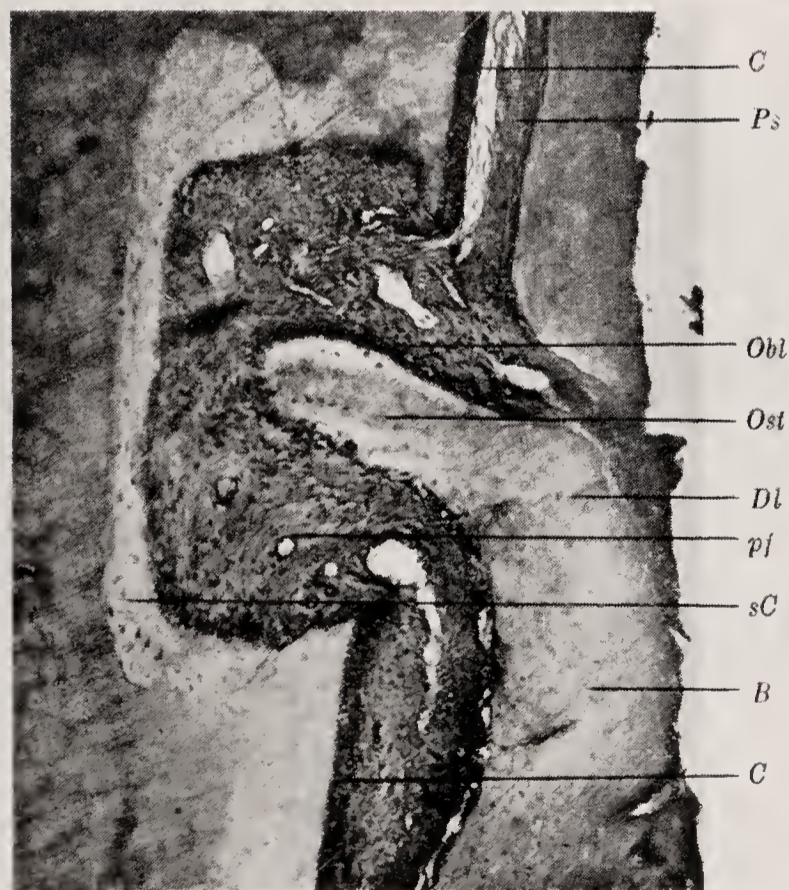


Fig. XIV.

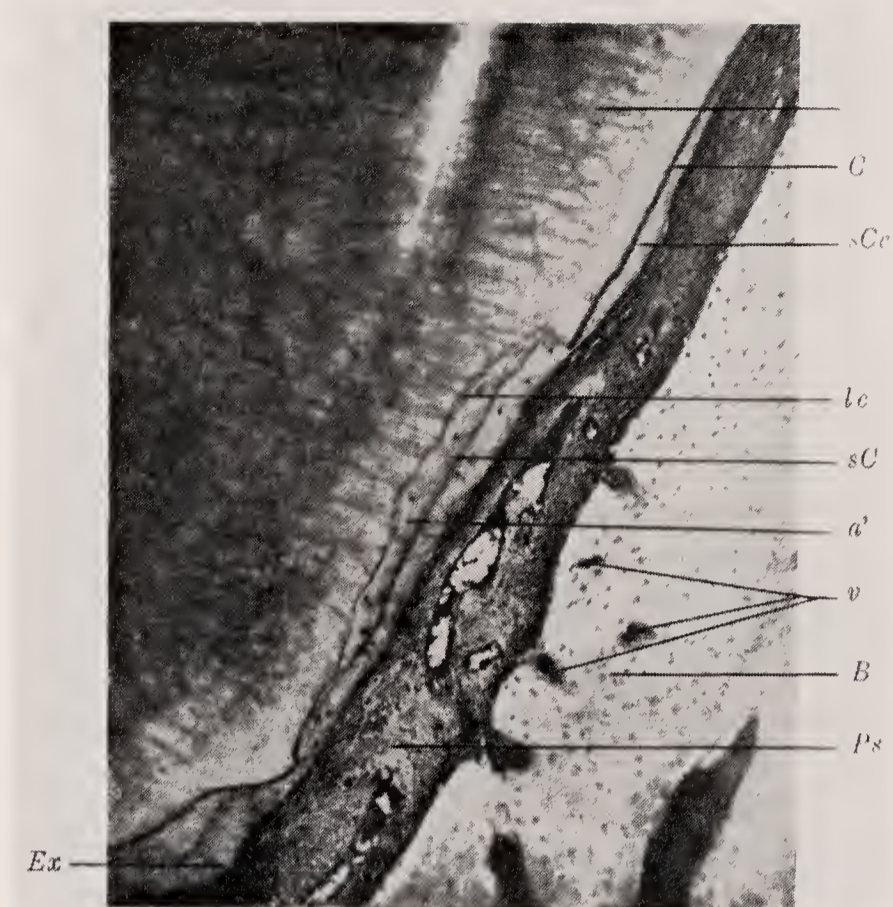


Fig. XV.

may later on become smaller as the secondary cementum increases. There are four more primary absorptions at the apex in an advanced healing stage. No angioma-like buffer is present ; perhaps it was not necessary. This again is almost biological—no buffers, intact cementum, equal width of periodontal space, and normal course of fibres in several places. But the pulp is far from normal—congested vessels—odontoblasts only normal in upper part of the coronal pulp. The reconstructed model from these sections shows these absorptions on the apex of the root and the intact cementum lying between.

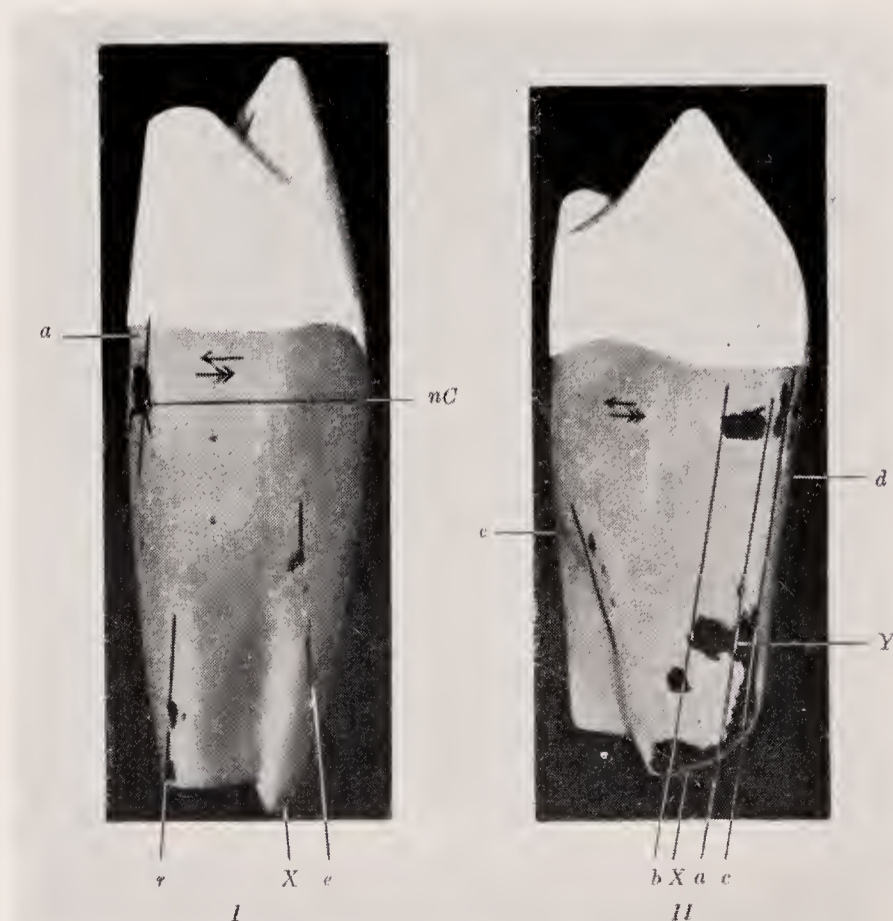


Fig. XVI.

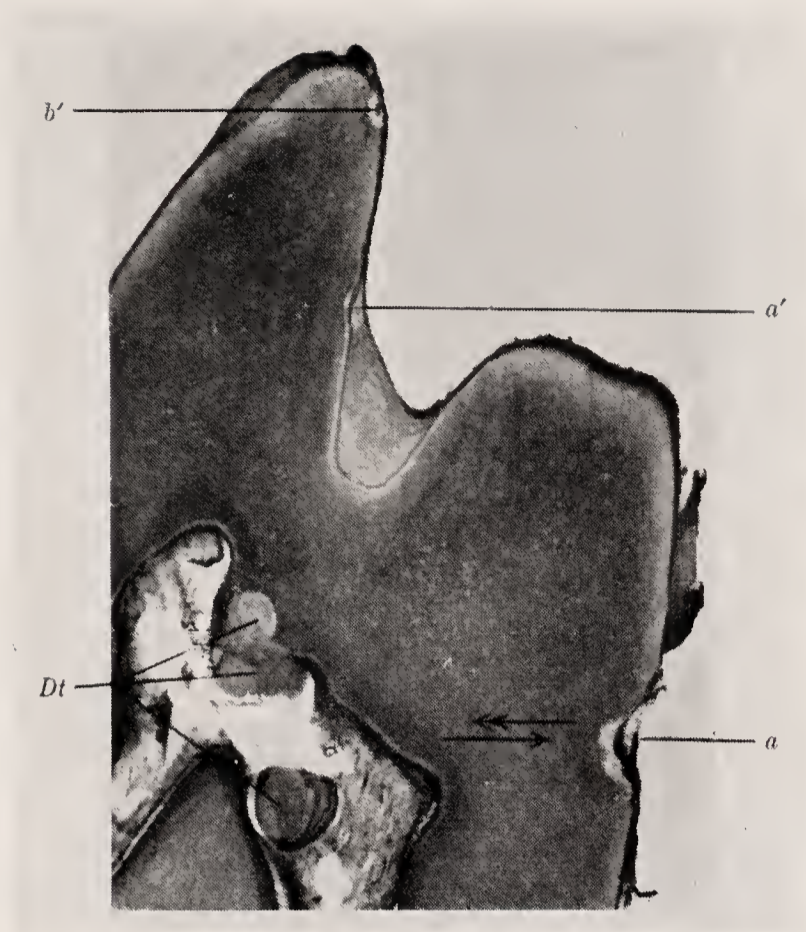


Fig. XVII.

The next specimen was the buccal root of a right premolar, treated with expansion arch ; three large absorptions are seen. In a further section in the series, these are seen to become confluent. Corresponding to this, there is an absorption at the apex on the palatal root ; there is also a shallow one in the septum. The damages to the pulp are shown in the production of denticles or pulp stones.

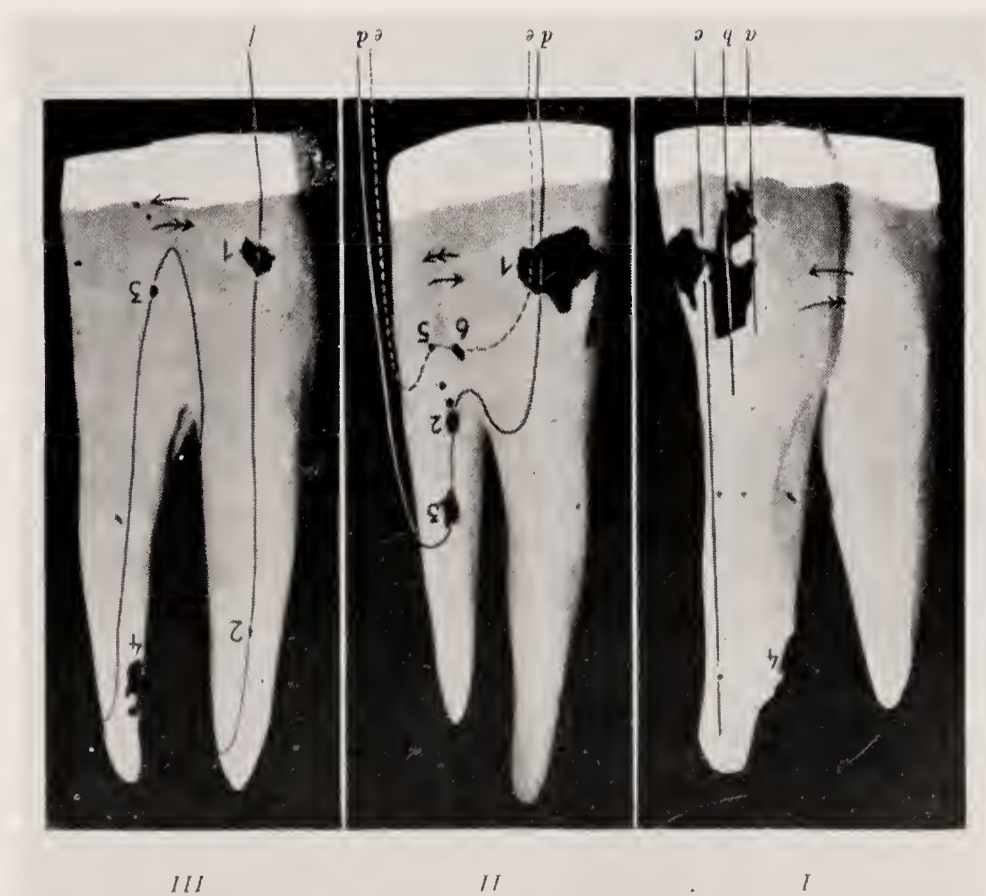


Fig. XVIII.

These three just described are the least damaged teeth in the series investigated by Oppenheim, and they tend to show that however gentle the force, such artificially induced movement can never be considered as biological. There are always injuries to bone, cementum and periosteum which are greatly increased when the force applied is continuous.

The cementum in man is very vulnerable ; the amount and depth of the absorptions depend on the kind and degree of force used and the duration of its application. Every absorption of the cementum may be a danger to the tooth, for it may be of such extent that exposure of the pulp results. There is often repair by secondary cementum. The alveolar margin is invariably absorbed ; this is not equal all round—there may be places where it remains intact while at others there is severe loss of tissue, and it has not been proved whether any restoration takes place. The results of experiments on human material do not tally with those from animal material.

In conclusion, Oppenheim once more states with great emphasis that there can be no such thing as biological orthodontic movement.

### Discussion

The PRESIDENT said that Mrs. Lindsay's paper was a most interesting one, especially that part of it which referred to Dr. Oppenheim's experiments, which he thought had given a good many orthodontists somewhat furiously to think. It had occurred to him that, if Dr. Oppenheim had discovered so many injuries due to the movement of teeth on the cementum and the adjacent tissues, it was rather strange that the results of all the treatment that was being given to mouths in this and other countries at the present time had not shown a large percentage of disastrous results. He thought the illustrations which Mrs. Lindsay had shown of the effect on the cementum were really staggering ; he had had no idea himself that tooth movement would produce pathological results of such a vast nature. When one saw slides showing nearly a third of the root of the tooth moved in the condition that had been shown, it led one to think seriously about orthodontic treatment in general.

Mr. G. NORTHCROFT said he thought Mrs. Lindsay had performed a very admirable service in bringing the work of foreign orthodontists to the notice of the Society. In this country the profession were rather inclined to take notice of that literature only which they could read with ease, and therefore the journals which they read were either British or American ones. It was extremely valuable for them to have brought to their notice the work of members of the profession outside these countries. It gave them a new slant on the work they were doing and counteracted their tendency to be too conservative and, possibly, insular.

Mr. HAROLD CHAPMAN endorsed Mr. Northcroft's remarks as to the value of Mrs. Lindsay's work, specially in view of the fact that the German journal which used to be printed in German, French and English was no longer in being. Those members of the Society who could not read German were under a deep obligation to Mrs. Lindsay for bringing before them the work of Continental orthodontists. He had been particularly interested in the first series of X-rays, which showed the different positions of teeth at different ages. It might be remembered that he had shown a series of models illustrating the natural and normal changes which took place. Mrs. Lindsay had

made it obvious that not only were models needed to show the changes which occurred after eruption but X-rays were necessary to show the changes that took place before the teeth erupted. Anyone doing orthodontic research work of this character should endeavour to have X-rays at the same time as models. He agreed with Mrs. Lindsay that if the laterals erupted rather buccally to the arch, they overlapped the deciduous canines, and the four incisors appeared in a straight line, but obviously if they erupted on the lingual side of the arch, as they did frequently, (he considered both these arrangements to be normal), then the laterals, being on the inner side of the curve, must appear considerably crowded, and that crowding corrected itself in the same way as the labial overlapping of the deciduous canines by the laterals did, by an increase in the breadth of the arch. The experiments of Dr. Oppenheim were extremely impressive and, as the President had said, gave one furiously to think, but the important point was to be able to say that they were conducted similarly to treatment in everyday practice, and he was not convinced of that and one had only to mention the type of treatment used in the experiments and the age of the patient and the absence of any mention of the amount of pressure used. In one case the amount of deflection of a spring was 2 mm., but the amount of deflection was not the only important factor ; another was the amount of force which was exerted when one had obtained that deflection of 2 mm., and a spring which was perhaps no thicker than a hair exerted very much less force than a considerably thicker one with the same amount of deflection. Another point which struck one in the experiments was that the absorption was very local. The President mentioned that it took place over a large area, but it did not take place over the entire root or even one aspect of the root by any means ; it occurred in patches. Therefore it might be that some slight variation in the factor producing the movement would cause considerably less absorption to take place. Similar experiments to those of Dr. Oppenheim had been carried out in America, and it had been found that, when there was extreme pressure, so that the vessels were occluded and the blood supply to the part was cut off, that there was no absorption, but when the pressure was less and the blood circulated there was absorption. He did not know whether Dr. Oppenheim had also found that result. He understood Mrs. Lindsay to say that the relapse of the tooth towards its original position was also accompanied by absorption of cementum although the tooth had no pressure applied to it. That seemed very extraordinary. It showed that some very slight factor must influence the absorption of cementum. The absorption might not be such a serious matter from the orthodontic point of view as it appeared to be, because apparently it repaired itself, and it was quite likely that in the course of that repair there might be some different type of union between the tooth and the alveolus which was a preventative against relapse. If that were so, absorption might be an advantage rather than a disadvantage. In a recent issue of the *British Dental Journal* there appeared a very interesting paper by Mr. Manley,\* showing that in the case of partially erupted teeth the gingival trough did not extend to the neck of the tooth but there was attachment between the crown of the tooth and the gum margin, in much the same way as when the tooth was fully erupted. This seemed to be a point to bear in mind when fitting bands to partly erupted teeth and to emphasise that care be taken not to damage that attachment.

Mr. H. C. VISICK asked whether Dr. Oppenheim had drawn any practical conclusions from his experiments. It seemed to him that all orthodontists must have exerted undue pressure at times on their cases, but he himself could not remember ever having lost a tooth

\* Manley, E.B., "The Nature of the Attachment of the Oral Epithelium to the Enamel." *British Dental Journal*, Sept., 1936. Vol. LXI, p. 265.

through undue pressure. He had seen teeth very loose in the old days, especially when the Angle arch and ligature wires were used, and he felt rather anxious about them, but he did not remember ever having seen one lost. He wondered whether, even when there was absorption of the root, that would really affect the life of the tooth, and he would be glad if Mrs. Lindsay could say whether Dr. Oppenheim drew that conclusion from his experiments.

Mr. H. G. WATKIN said that Dr. Oppenheim ligatured the tooth and then gave it a rest. The ligaturing appeared to exert far too much force, and that probably accounted for the results obtained. As Mr. Chapman had said, if so much pressure was used that the blood supply was cut off there was no absorption. He thought from that point of view Dr. Oppenheim's work was more or less useless, unless he made the force so weak that the blood supply was not cut off and therefore absorption took place on the side towards which the tooth was moving. If Mrs. Lindsay could give some idea of the pressure that was exerted it would make her paper more valuable.

Miss K. C. SMYTH thanked Mrs. Lindsay for the immense amount of work that she had done in preparing her paper and endorsed the remarks of previous speakers as to the importance and value of orthodontists in this country taking an interest in the work of those in other countries.

Mrs. LINDSAY, in replying to the discussion, said she felt that she had not done justice to Dr. Oppenheim's article. It was very long and dealt with very many cases, and she had chosen the three described in her paper because they were the least damaging and because Dr. Oppenheim had the models of those three cases. She thought she had mentioned at the beginning of her paper that Dr. Oppenheim had not used ligatures only; he had used the Angle expansion arch, a straight spring soldered to the arch, a spring on the lingual arch which was not secured in its position, and a closed loop spring. He had used weak springs and lingual arches and labial arches. He was very much against the use of the lingual arch and continuous pressure, and he said that even the weakest continuous pressure was more devastating than intermittent pressure. He showed considerable damage to the pulp; with an epidiascope she could have shown more. In the current number of the *British Dental Journal* there was a case of a girl whose teeth all had pulp stones. She would like to know whether those teeth had been treated orthodontically. She also wondered whether the mysterious cases of pink spots were not due to orthodontic treatment. Probably strong teeth and well formed tissues would not receive such damage, and it would be noticed that in the absorptions there were also active conditions of repair. That probably answered Mr. Visick's question as to recovery and was perhaps why the results were not so devastating as might be expected. Mr. Chapman had referred to the natural changes which took place in the teeth and to studying X-rays of the tooth germs, and that was one of the points made by Bustin, who said that one should not depend either on the X-rays alone or on the clinical observations alone but the two should be used together. With regard to the ages of the cases treated, they were all about 13, several were 13 and one was 16. Dr. Oppenheim seemed always to have got absorptions in the period of relapse, but there was always repair, and it would be noticed that on the side of relapse the cementum had not been damaged; it was more the changes in the bone.

The PRESIDENT tendered the thanks of the Society to Mrs. Lindsay for her paper and to Mr. Bane for his short Communication,\* and the meeting then terminated.

\* "Entire Lack of Occlusion of Molars and Premolars," published in *The Dental Record* Feb., 1937.

# Retention of Deciduous Teeth associated with Absence of Upper Permanent Lateral Incisors and Malposition of other Permanent Teeth\*

By T. LEITH WINN, H.D.D.Edin., L.D.S.Eng.

MR. T. WINN said the case he presented was that of a boy who came to see him about two years ago, being then thirteen years of age.



(FIG. 1.)

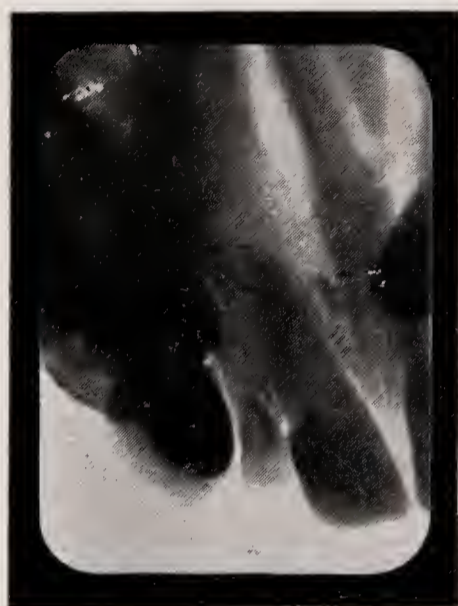
On the left hand side the deciduous lateral and the deciduous canine were still present, and, on the right hand side, the deciduous lateral, the canine and the first temporary molar. All those temporary teeth were rather loose when the boy came to see him.

\* Read before the Society, December, 1936.

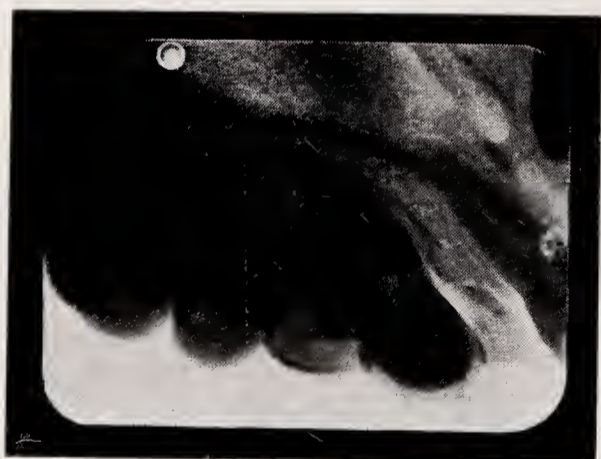
The X-ray showed a complete absence of the lateral incisors. On one side the unerupted permanent canine was lying in a horizontal position, and on the other side the first premolar was also lying horizontally.



(FIG. 2.)



(FIG. 3.)

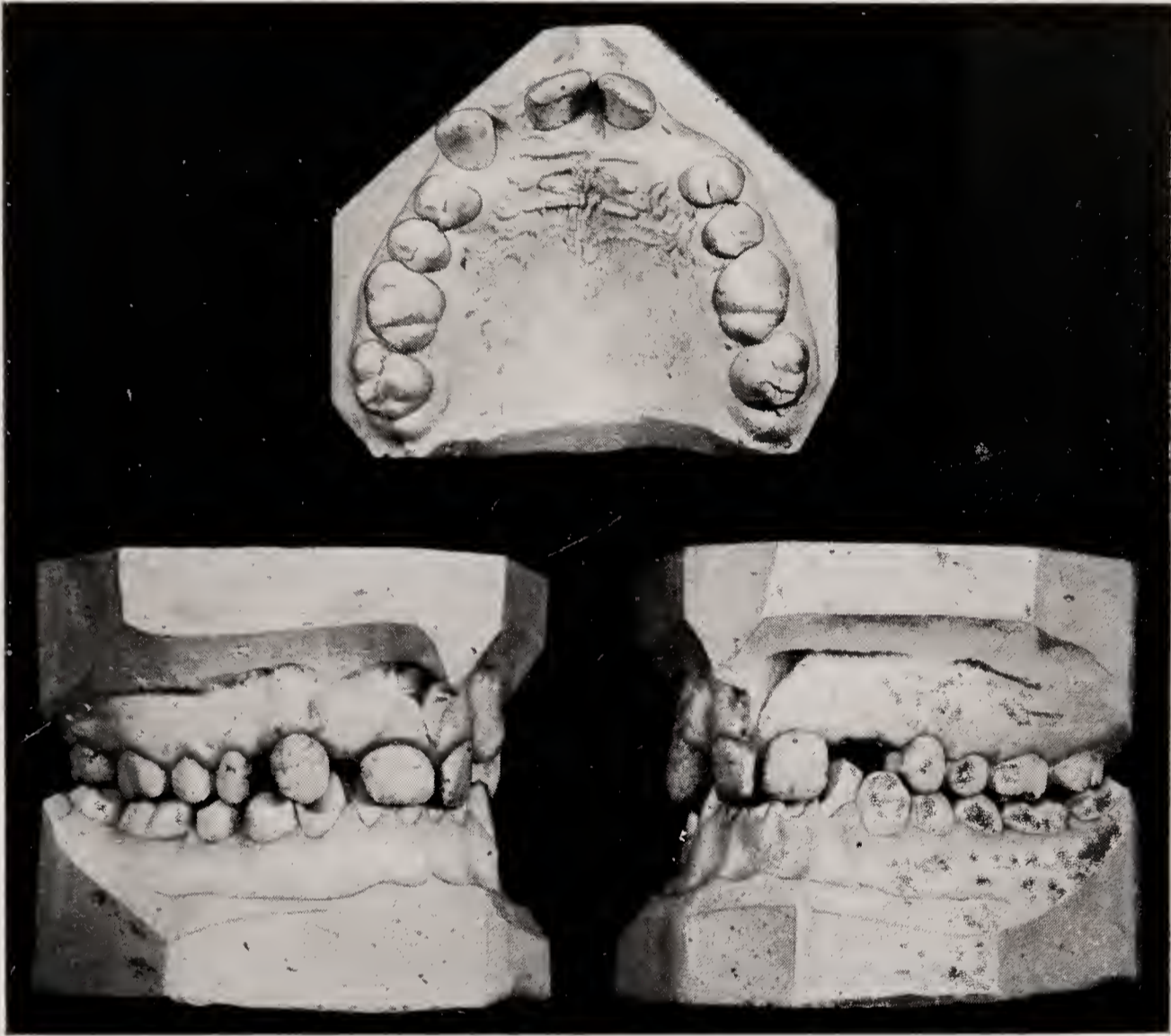


(FIG. 4.)



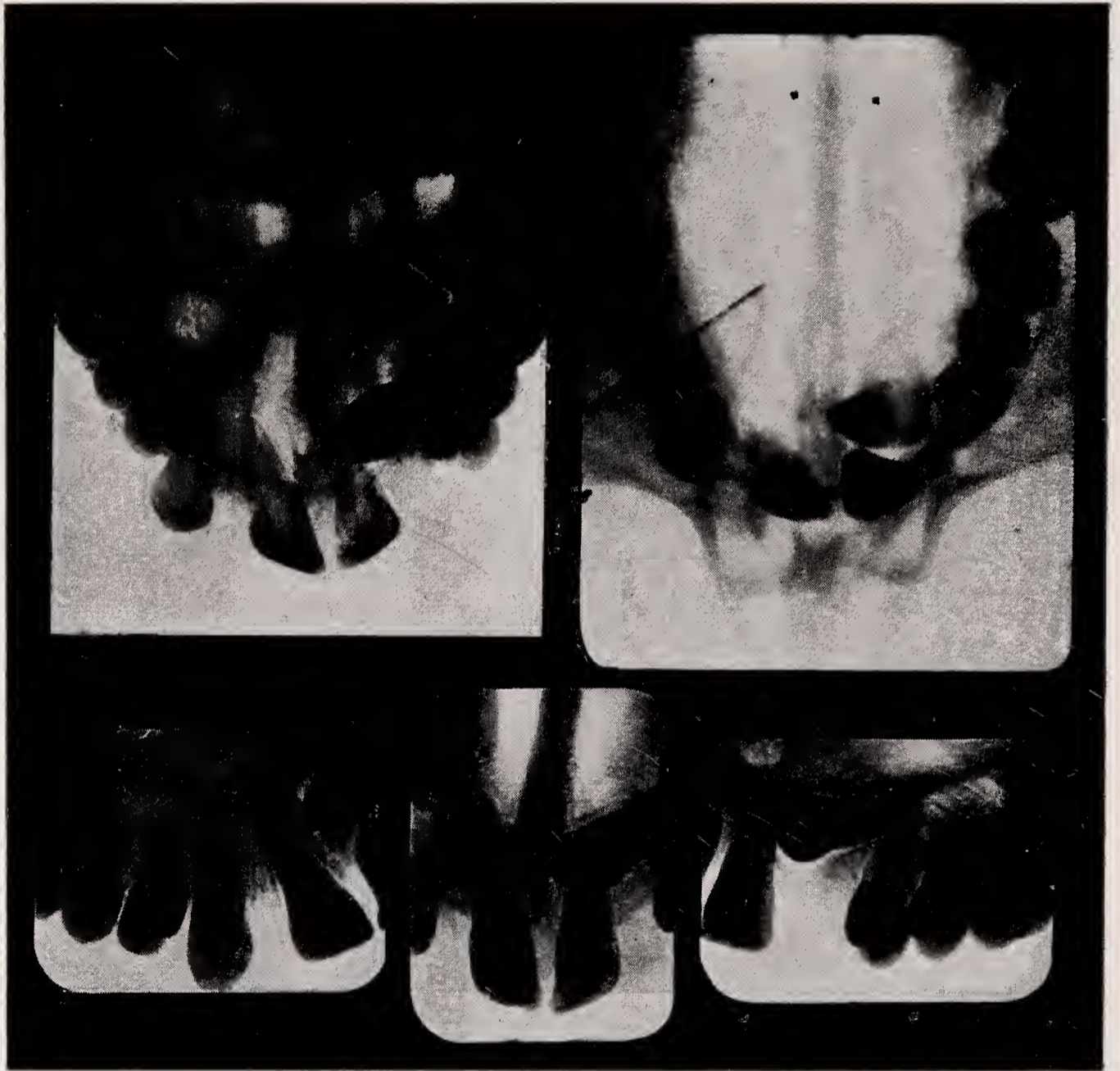
(FIG. 5.)

The premolar could just be seen. The temporary teeth which were loose were removed, and two years later, at the age of fifteen, he saw the boy again.



(FIG. 6.)

By that time the premolar had come down in position on the right hand side. The canine was lying in a horizontal position. There was a very marked difference between the bite on the two sides of the mouth. On the right side the antero-posterior occlusion was about normal, but it was very different on the left side.



(FIG. 7.)

The films showed that the canine was still lying in somewhat the same position. The premolar on the other side had come down into almost a normal position, but he could not see any sign of movement of the canine.

He did not know what treatment to adopt. The boy was now fifteen years of age.

## Discussion.

The PRESIDENT said Mr. Winn's case was a very interesting one. With regard to treatment, he thought the best thing to do would be to remove the canine tooth which was lying horizontally.

Mr. O. HENRY, referring to the treatment of such cases as Mr. Winn had shown, said that if the entire crown of the tooth was exposed and the bone removed, the tooth would come down of its own accord, without any orthodontic treatment.

Miss K. C. SMYTH said that she also had had experience of teeth which had come into position without further treatment when the bone had been removed, but she had had other cases, which appeared to be similar in every respect, in which the tooth, when uncovered, did not come down into position but had to have some mechanical assistance.

Miss POSSENER asked whether any means had to be adopted to maintain the opening after the operation, or did one just wait and then the tooth automatically came down ?

Mr. H. G. WATKIN said that in some cases the tooth came down quite easily, whereas in other cases it was absolutely necessary to have an appliance. A great deal depended on the angle at which the canine was placed.

Mr. MAXWELL STEPHENS said that he had carried out a small operation on the soft tissues a number of times when canines were in the position Mr. Winn had described. He usually put in a vulcanite palate, warming the vulcanite down into the cavity left by the removal of the soft tissue so that it touched the eye-tooth just sufficiently to maintain a small stimulus. The process must not be hurried. If asked, Miss Smyth and other specialists would confirm that in the use of traction only the lightest force must be applied : in some cases it might take two or three or even four years before the canine came down, but it would travel down in time if nature was given a little assistance.

Mr. NORMAN GRAY said that in the case of a canine the bone should be removed above the convex surface ; then the tooth would have a chance of coming down.

Mr. L. S. LEVIEN said there was much more chance of the canine coming down when the lateral was missing ; if the lateral was in place it was difficult to get the canine down. When the bone was opened the opening must be maintained by one means or another for some considerable time, and the whole crown of the tooth must be exposed. He had done that and used a packing of ordinary sterile gutta-percha and complete healing was obtained underneath. He had then taken an impression of the crown and made a cap with a little hook on it for employing traction. It usually took two or three years to get the tooth in place.

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# Effects of the use of A Mouth Shield\*

By C. S. MORRIS, M.R.C.S., L.R.C.P., L.D.S.

MR. C. S. MORRIS showed models of three cases dealt with by his brother in Cornwall, which showed the effect of wearing a mouth shield. In the first case the shield had been worn for six and a half months, and it would be seen that the bite had been raised and the front teeth had been pushed back very considerably, and there was a slight widening in the molar region. In the second case the shield had been worn for six weeks only, and it would be seen that a very marked effect had taken place. In the third case the shield had been worn for six months, and the effect in that case was very great—more marked than in the other two cases.

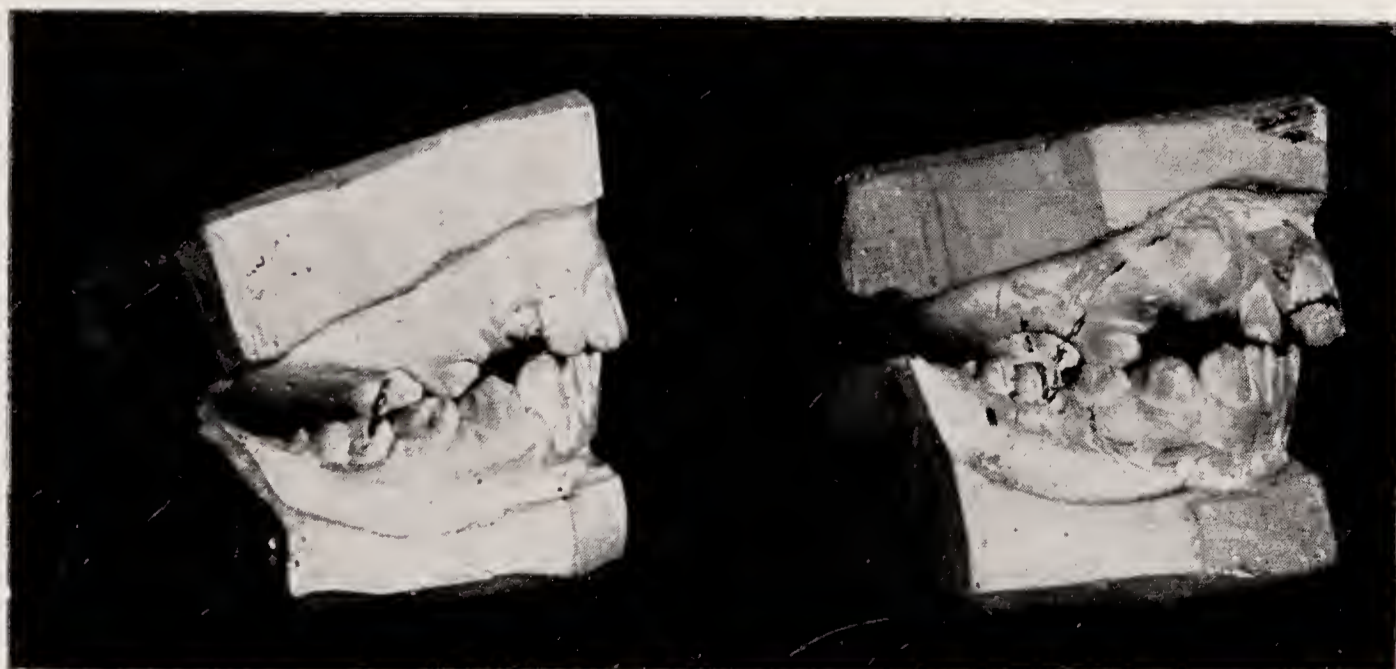
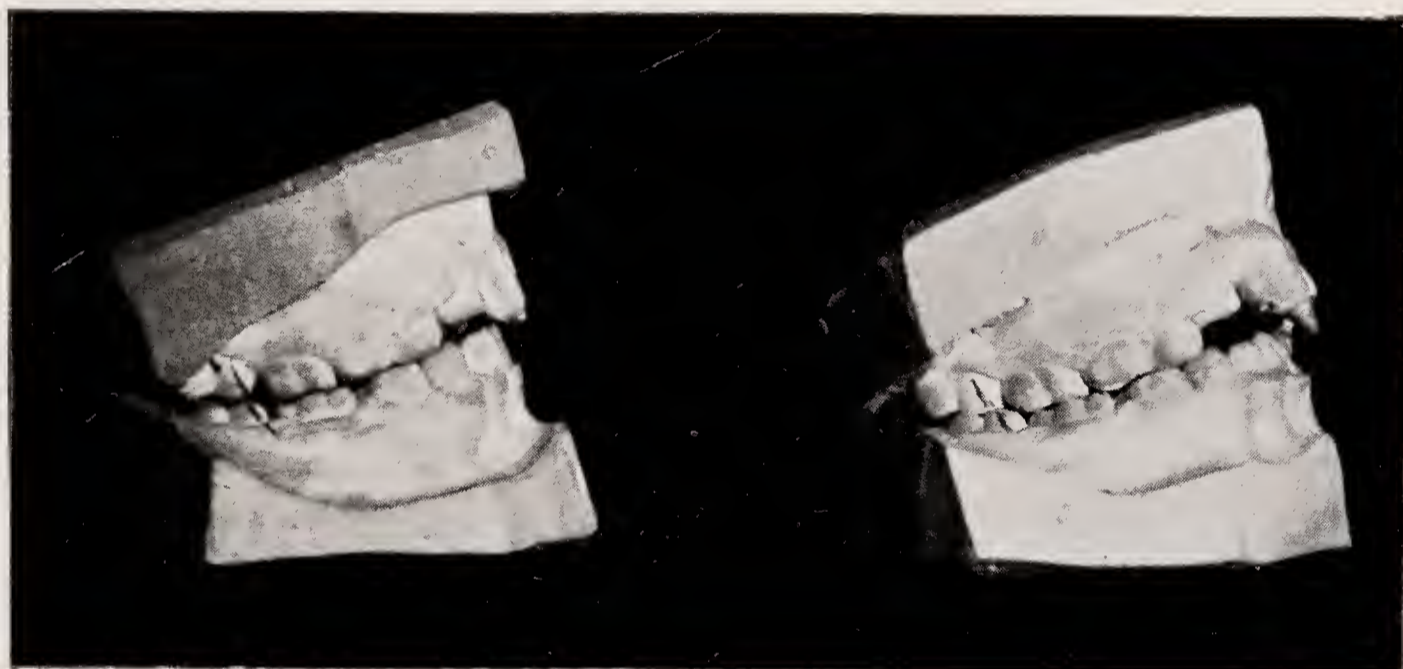
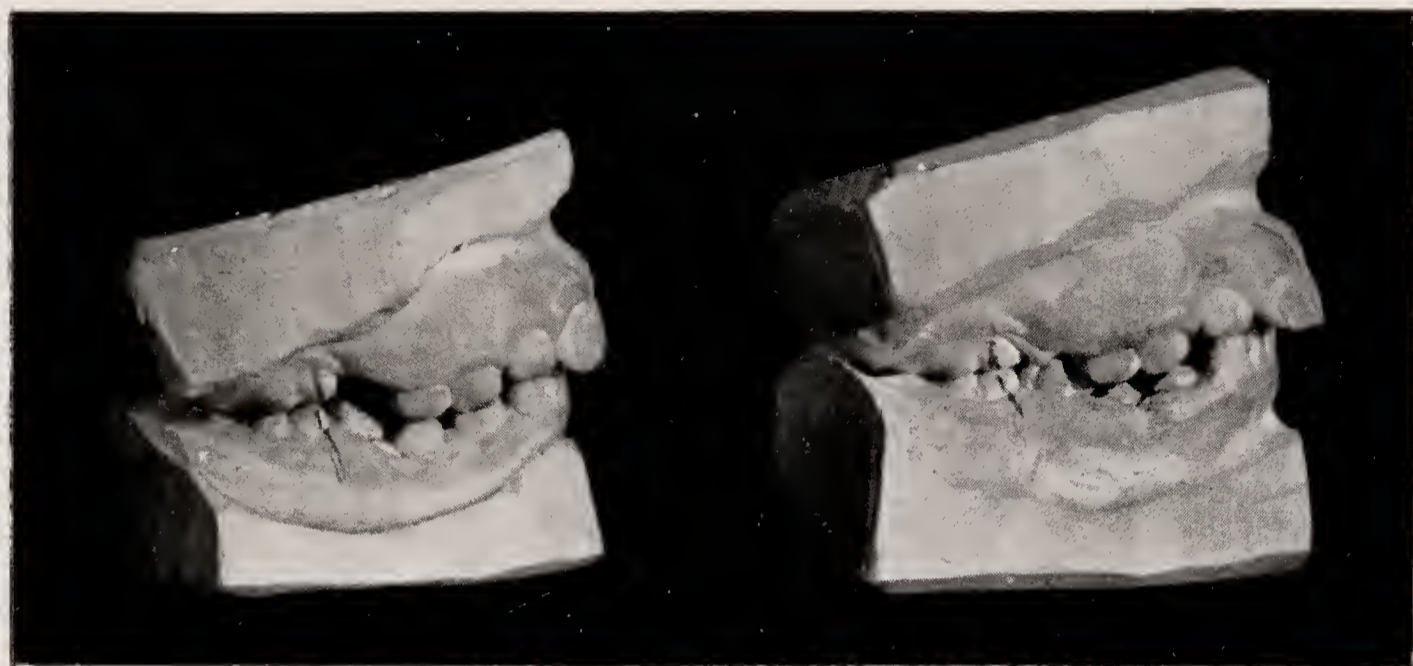
He did not know anything personally about the actual making of the shield, but his brother had told him that it was a very simple thing to make. One articulated the models and filled up all the interstices on each side and made an aluminium shield that fitted more particularly on to the prominent teeth which were being retracted—the upper front teeth. The prominent teeth on the models were first slightly scraped, so that when the shield was put in the pressure was entirely on these teeth. The shields were worn only when the children were in bed, and he thought it was very interesting to see how much effect could be produced when they were worn only at night and for such a short period as in the cases he had shown.

## Discussion.

The PRESIDENT said the cases shown by Mr. Morris were most interesting ones. The only experience that he himself had had in private practice with regard to the use of mouth shields was some time ago in the case of an American patient, a man of between forty and fifty years of age, a distant relative of his, who asked him to make a mouth shield for him to wear at night. He asked him why he wanted it and gathered that he thought it was the correct thing to wear one at night, to prevent mouth breathing and perhaps snoring. It seemed to be quite a common thing to wear them in America. Apart from that, he had had a certain amount of experience of mouth screen shields in the case of small patients in hospital. Some of them were worn quite satisfactorily, but in other cases they were shed at night and found at the bottom of the bed in the morning; he did not know whether that was due to faulty construction. There had been a wonderful improvement in the cases shown by Mr. Morris.

Mr. MAXWELL STEPHENS thought it was useful that the method of using oral screens, or anti-mouth breathing valves, and its concomitant dental benefits should be ventilated from time to time. Mr. Northcroft was one of the originators of the screen, and then Mr. Warwick James about the same time brought another type forward. He had essayed to make them for some years, feeling that they would be most useful, but had failed to get patients to wear them until he met Mr. Dickin of

\* Read before the Society.



Yeovil : then he found that he had made a mistake in the technique of production. Mr. Dickin made his screens of aluminium, and endeavoured to obtain a seal against the buccal mucous membranes so that suction was obtained, whereas he had fitted any material he used closely to the teeth. He knew that some people made the screens of vulcanite ; he had done so himself, but he now used aluminium principally. He had worn one himself during sleep for several years : he used to find that his voice was tired at the end of the day in the surgery, but he found that by wearing a screen and inducing a healthier condition of the post-nasal mucous membrane, there was a reaction in favour of the chords and larynx. During his two years association with Mr. Warwick James in war work, he had obtained many valuable hints from him on the subject, including the history of a case in which Mr. Warwick James had used a screen satisfactorily to help a patient suffering from middle ear disease. There were many dental cases where general symptoms could be indirectly improved by their use. He knew that a great deal of valuable dental work was being done with them now, and he felt that they could be of greater and greater use if more cases were brought forward ; especially might they be useful to those dentists who were not specialists, and did not practice an orthodontic technique, and to patients to whom the size of the fee was of moment. He had often found these screens of great use in the case of children about the age of eight who had acquired the habit of interposing the lip between the upper and lower incisors, especially at night. Wearing of a screen prevented a great deal of trouble in such cases, and tended to prevent retroversion of the lower incisors. Incidentally the tendency towards expansion of the arches could be seen from the models that Mr. Morris had shown. He himself had only used screens consistently in practice for about three years, but had found them of great use : if they were to be successful, then some intelligent consideration had to be given to their design. With regard to the President's remark as to the difficulty of keeping the screen in at night, he had found that a very good plan, which Mr. Dickin had first mentioned to him, was to let the child go to bed without the screen, and when asleep to disturb it only sufficiently to put it in. It was usual then for it to remain in throughout the night, and the child would remember nothing of the occurrence in the morning. With regard to the removal of upper premolars to be followed by retraction of upper incisors, he had found that the interposition of an oral screen between the lips and the teeth at night often accomplished movement by inclination in three to four months, without the use of any additional appliance—usually in cases where the occlusion of the first permanent molars was normal.

Mr. H. G. WATKIN thanked Mr. Morris for bringing forward the very valuable and simple apparatus that he had described. It was a great pity that it was not used to a greater extent than it was at present ; he thought that owing to its great simplicity it was often overlooked. With regard to the difficulty of keeping the shield in at night, to which the President had referred, he thought that was very often due to the fact that it was made too small ; it should come right to the ends of the first permanent molars. The bigger it was the more easily it would stay in the mouth. Some people asked whether children would wear the shields. Quite recently he had had occasion to alter one ; it had moved backwards a considerable distance and the concave part required to be filled up with vulcanite, so that pressure would be exerted in the right place. It had ceased to rock, because the teeth had gone back. He told the child's mother that it would have to be altered in the workshop, and the child started crying and said : " I can't go to sleep without it." That showed that if shields were properly fitted

they were not at all uncomfortable, and, in fact, children like them ; they were a comfort to them and prevented them from sucking their thumbs. The shields also prevented mouth breathing ; anyone who was subject to mouth breathing at night and wore a shield would wake up with a comfortable throat instead of a dry one. He always made the shields of vulcanite. Then when they required alteration they could be warmed in a flame and very often re-modelled in a few minutes, instead of having to be dealt with in the workshop.

Mr. HAROLD CHAPMAN said that one point he had noticed about the cases shown by Mr. Morris was that there was no excessive overbite ; in other words, the upper and lower incisors were not in contact. They were therefore very favourable cases for the use of a mouth valve to exert pressure on the upper incisors. It was very interesting to see three such cases at one time ; in his experience they were not common. It seemed to him that they were admirably suited for the treatment in question, although in one or two there might have been some improvement even though no treatment had been instituted. Mr. Maxwell Stephens had referred to Mr. Warwick James : he thought that perhaps Mr. Warwick James would say to-day that the screen was not so much for preventing mouth breathing as for causing the individual who used it not to allow air to enter through the mouth, because he (Warwick James) said that there were practically no mouth breathers at all ; although such persons had their lips apart they were not usually mouth breathers in the sense that that expression was originally used to convey.

Mr. NORMAN GRAY thanked Mr. Morris for his very interesting communication. He had one patient, a child of about eleven or a little younger, who had had rather bad gingivitis, aggravated by sleeping with an open mouth, and the screen seemed to help the gum condition very materially. With reference to Mr. Maxwell Stephens' suggestion, he noticed that many children when they really got to sleep slept as though they were drugged, and he thought it might be quite an easy matter to put the screen in when the child was asleep. Children seemed to tolerate almost anything then. He took his own small daughter out of her cot only the other day and showed her to friends without waking her. She did not seem to have the slightest recollection of it afterwards.

Mr. G. NORTHCROFT said that one point which had been demonstrated by the cases shown by Mr. Morris was the uselessness of the Society's museum. Cases showing the adaptation of an anti-mouth breathing valve to models and the way it was constructed had been in the museum for a great many years, but he was not surprised that Mr. Morris was ignorant of that fact, because the museum was never open to inspection. It was also some time since Mr. Dickin read an enthusiastic paper on the subject at the Odontological Section of the Royal Society of Medicine, and it was surprising that more members did not seem to realise the advantages that could be obtained from the apparatus.

Mr. MORRIS, in replying to the discussion, said he did not think the shield was for universal use ; the cases had to be picked, and his brother had picked them more or less under the tutelage of Mr. Dickin. He thought the shield was of very great advantage to patients who lived at a distance and who could not afford to pay large fees. His brother had written to him as follows about two other cases he had sent to him : " Both these cases are interesting, I think, although only in the first stages of treatment. Comparison of models taken originally with the result of treatment reveals all sorts of changes. The most deceptive thing is that the arches appear to have widened as well as the teeth forced back, but on measurement this appears to be an optical

illusion.” One of the cases had been under treatment for eight months, and the screen had been changed once. With regard to the other case, which had been under treatment for only a short time, his brother wrote : “ You will note what a short time this screen has been on and also the complete absence of treatment ; beyond handing the child the screen on October 10th I have never seen her, only telephoning to get the models. After the first night she wore the screen quite comfortably without a complaint of any sort.” He was interested in Mr. Maxwell Stephens’ plan of waking up the child in order to introduce the screen, but his brother had no trouble in getting children to wear it. “ Whether one is going to rectify the whole case with a screen alone I personally cannot say, but I think it is doubtful.” With regard to the other case, which had had a long treatment, his brother wrote : “ The screen was first put in in March, and I put a second screen in in June. My reason for the second screen is that you have to be careful that the pressure is entirely confined to the front teeth ; as soon as they go back this is lessened and so a new screen is indicated. The argument for the screen is that it raises the bite. I do not think anything of this sort has happened with this case. . . . Assuming that one can carry out entire treatment in suitable cases with the screen, it appears to me to have enormous advantages. (1) No attention ; (2) No adjustments or breakages, and all this means enormous saving of expense ; there is no interference with cleaning teeth or gum margins ; (3) No retention : the screen can be worn indefinitely, which means no relapses. Of course, apart from these advantages, there is the great advantage of curing mouth breathing when present. It seems to me when you consider these advantages they are really extraordinary, as compared with the multitude of difficulties one has with any other method.”

# ORTHODONTIC ERRORS\*

By HAROLD CHAPMAN, L.D.S.Eng.

ERRORS strike an unpleasant note at any time and more so on the last evening of a presidency ; but all well conducted concerns take stock : a few minutes so occupied may prove to have been profitably spent. In our case each of us will consider the benefits which orthodontic treatment has given our patients, not over the past twelve months but several years after treatment has been completed: in my own case experiences are disquieting in the extreme and no cause for professional congratulation. I have previously shown a number of cases in which I have made mistakes : whilst I have considerable reticence in bringing to your notice the cases of others, particularly when those others are not here to speak for themselves, I feel that by so doing I may be preventing someone from falling into similar errors : I should explain that the cases illustrating this paper came to me in consultation.

Before dealing with the particular cases there are a few generalisations which are worthy of our consideration. Some time ago I noticed a title "Treatment and Diagnosis"—if one puts the cart before the horse in that manner what but chaos is to be expected. Unnecessary orthodontics will result and, if prognosis is included with diagnosis and treatment, treatment, which is hopeless before it is begun, is bound to ensue and the last state of the patient will be far worse than if nothing had been attempted.

In my experience such cases are far from uncommon : I am not alone in views of this character ; here is a quotation from a recent letter (November, 1936) written to me by a member of this Society—" . . . on balance the interest in the subject in the last forty years has been more productive of harm than good."

One constantly reads exhortations to the orthodontists to be up and doing. Here is one brief sentence of such a character—"Wonderful results could be obtained . . . " ; there is so much enthusiasm in it that one may be forgiven for being carried away, but I warn my readers to beware as the pitfalls are many and the repercussions on the patients serious.

What is the source of the belief that wonderful results can be obtained in so many of these cases ? It is not experience but the result of teaching and reading—the literature hardly refers to the opposite view : we, the orthodontists, are to blame for this, and if orthodontics is not to fall into disrepute, treatment must be adjusted to the newer knowledge obtained from experience.

If practitioners had as their objective :—

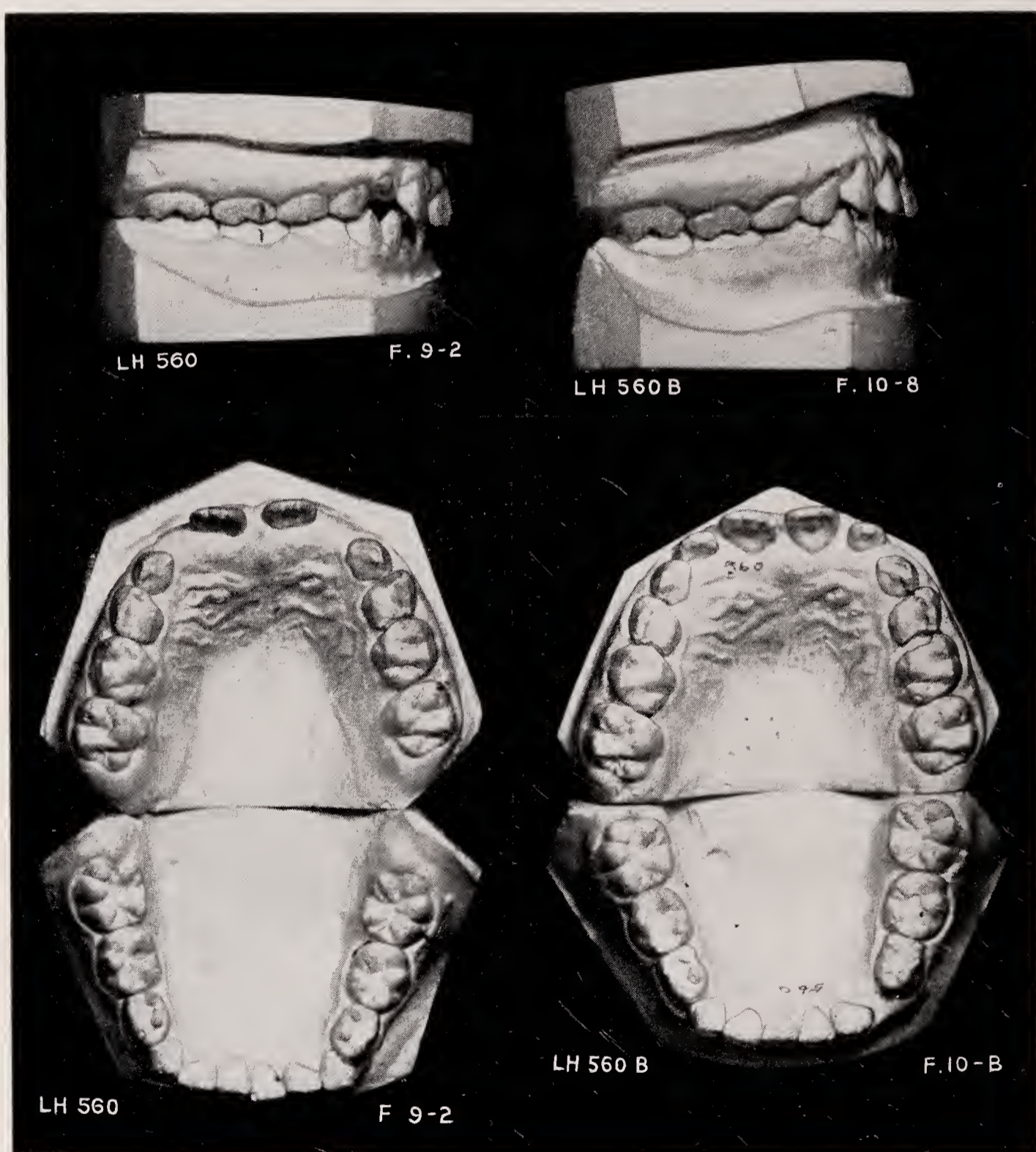
- (a) Good occlusion of the cheek teeth ;
- (b) Good alignment of the upper incisors ;
- (c) Good occlusal relations of the upper and lower incisors (not of necessity retaining all the teeth), the average quality of results

\* Read before the Society December, 1936.

would be raised at once provided the cases in which these results could not be obtained and maintained were left untreated.

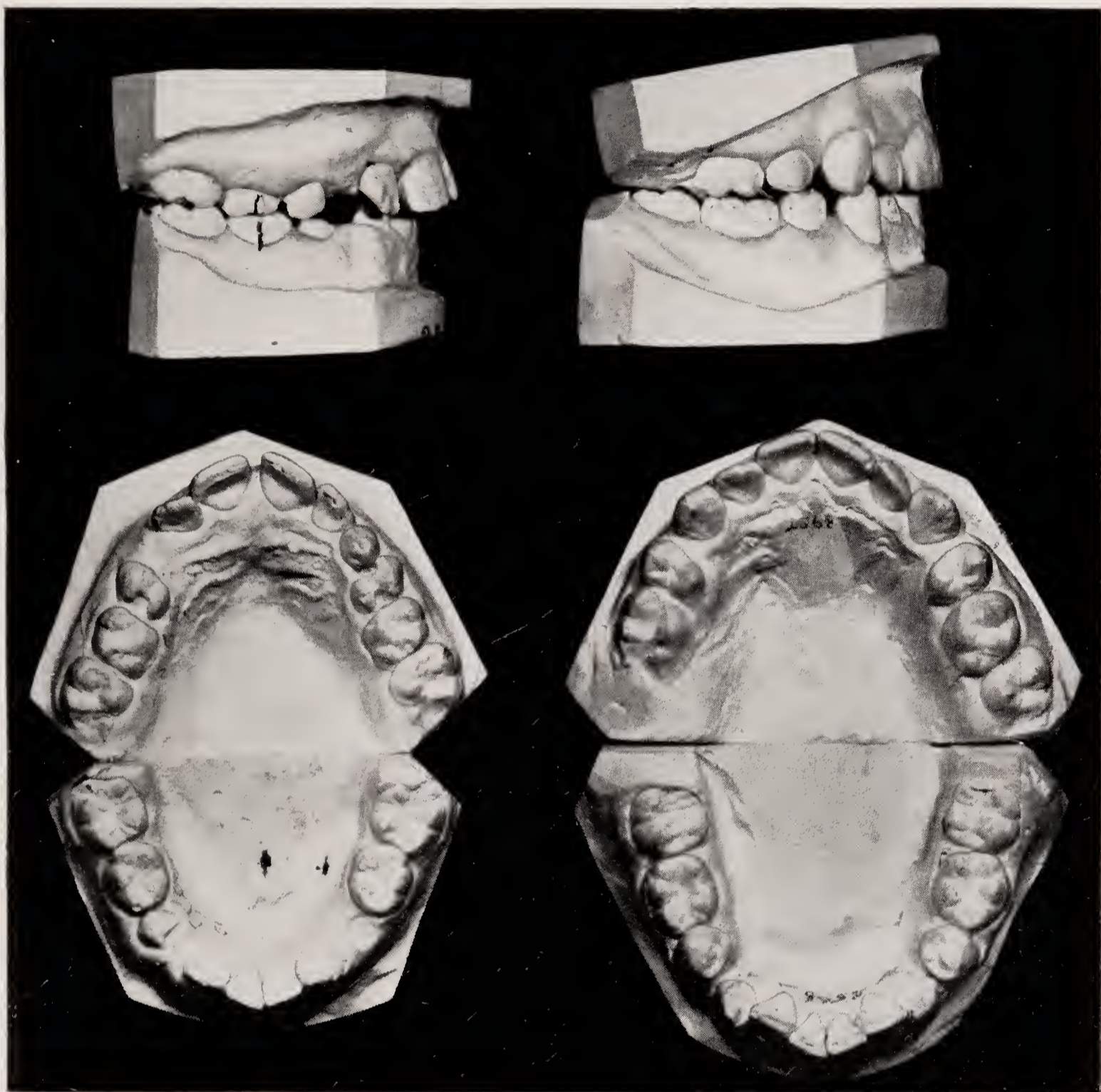
The writer believes that it is good treatment to remove an upper incisor in suitable cases if it will facilitate obtaining a good result : it does not follow that if such a tooth were retained, and another extracted instead, the result would be better or even as good.

A few cases are reported in which these objectives were not made the basis of treatment, or which illustrate some other point raised in the paper.



*Fig. 1. Normal Case No. 560, L.H.D.D., F. æt. 9-2 and 10-8.*

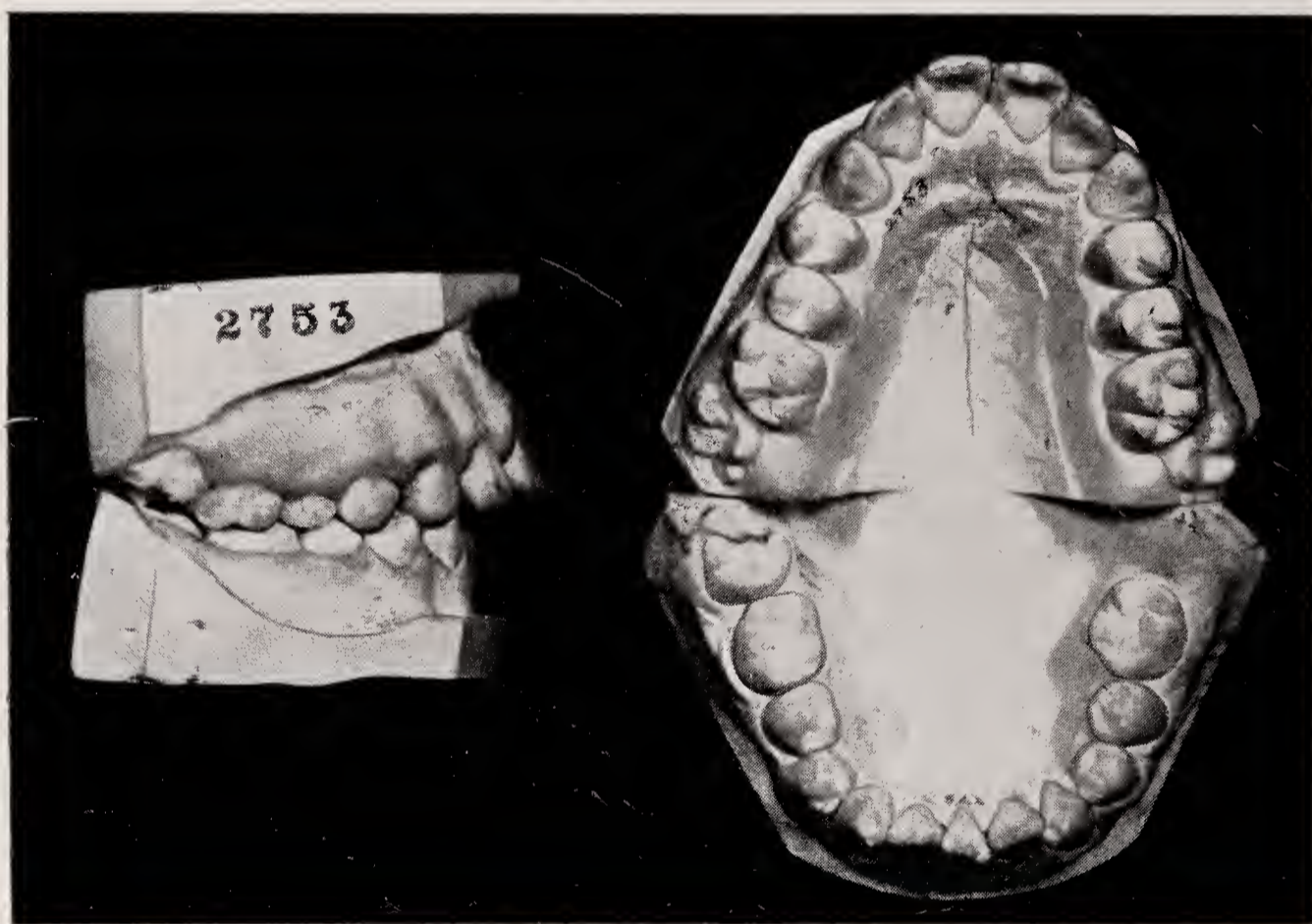
Referred on account of spacing and rotation of  $\overline{1} \mid \overline{1}$  : in eighteen months both have entirely corrected themselves ; also improved alignment  $\overline{2} \overline{1} \mid \overline{1} \overline{2}$ . This case emphasises all importance of knowing the normal.



*Fig. 2. Class I, Case No. 2568, F., æt. 9-3.*

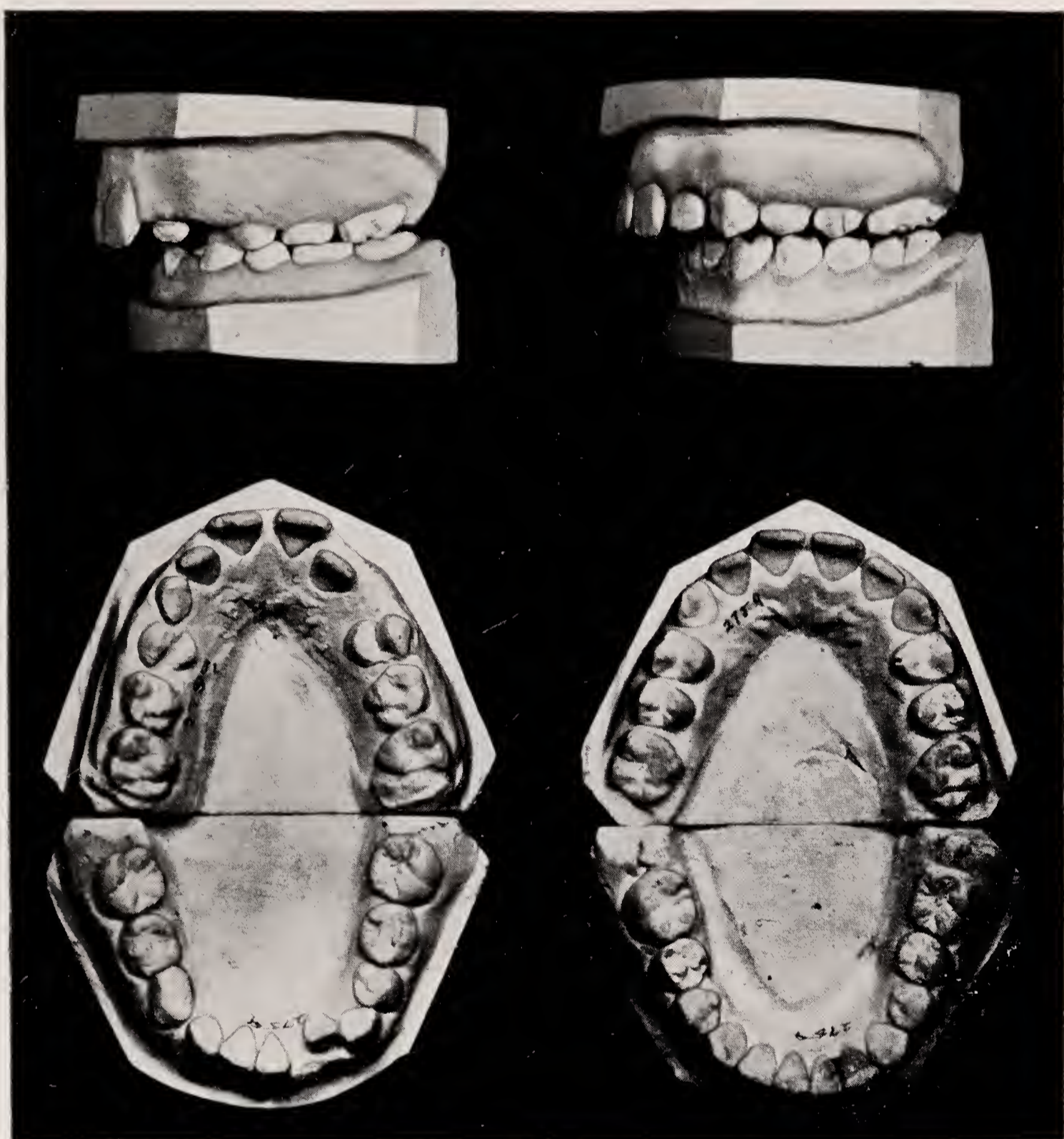
Crowding of the anterior teeth : all four permanent canines will be labial to the arch. This case was being treated to press the upper canines lingually (without extraction) with a labial bow into an arch already crowded. The child was seen by a colleague on account of pain in the upper central incisors, presumably caused by the pressure of the labial wire on these teeth. Later all four first premolars were extracted and the canines retracted, all space so obtained being preserved for the canines as it was barely enough. Before the canines were fully retracted a labial wire emerging from the palatal aspect between 43 | 34 was substituted for the springs retracting 3 | 3: this new wire, without loops, prevented further retraction of the canines and had an unnecessary compressing effect on the six upper anterior teeth. At the same time the lower teeth were left without any appliance and the right canine moved towards its old position.

In this case the treatment originally attempted was to put the canines into spaces not large enough to contain them ; later the full benefit of extraction was not obtained because part of the appliance occupied space which the canines should have occupied : also retention should have been continued longer with the appliances used for tooth movement, adapted to their new purpose.



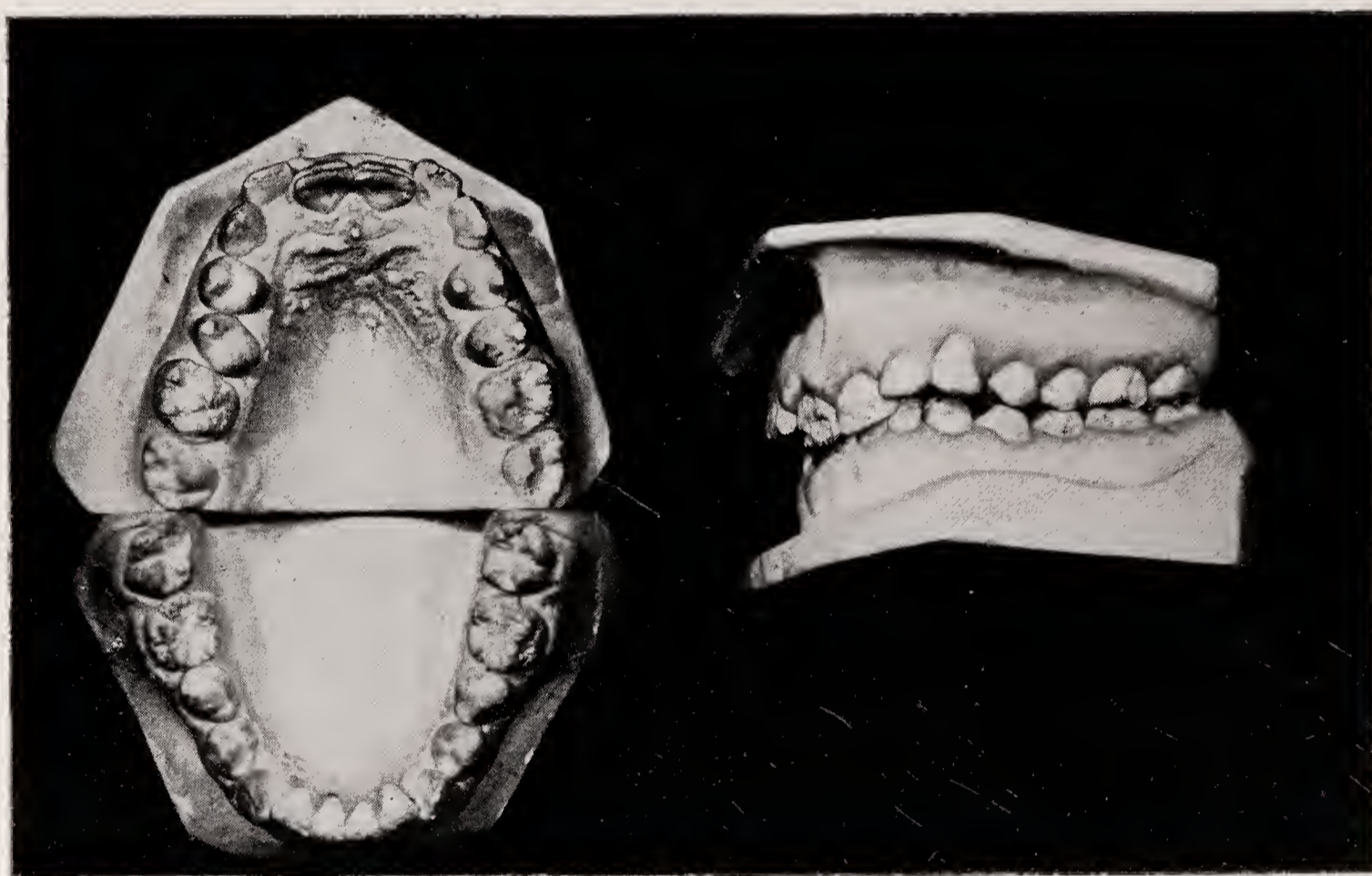
*Fig. 3. Class I, Case No. 2753, M., æt. 13-9.*

This appears to be a case of treatment before diagnosis as a lower incisor has been lost, reducing the size of the lower arch ; the effect is to give the patient the appearance of a Class II, Div. I case. The best treatment now appears to be removal of the upper laterals and retraction of the upper central incisors.



*Fig. 4. Class II, Div. I, Case No. 2759, F. æt. 10-1.*

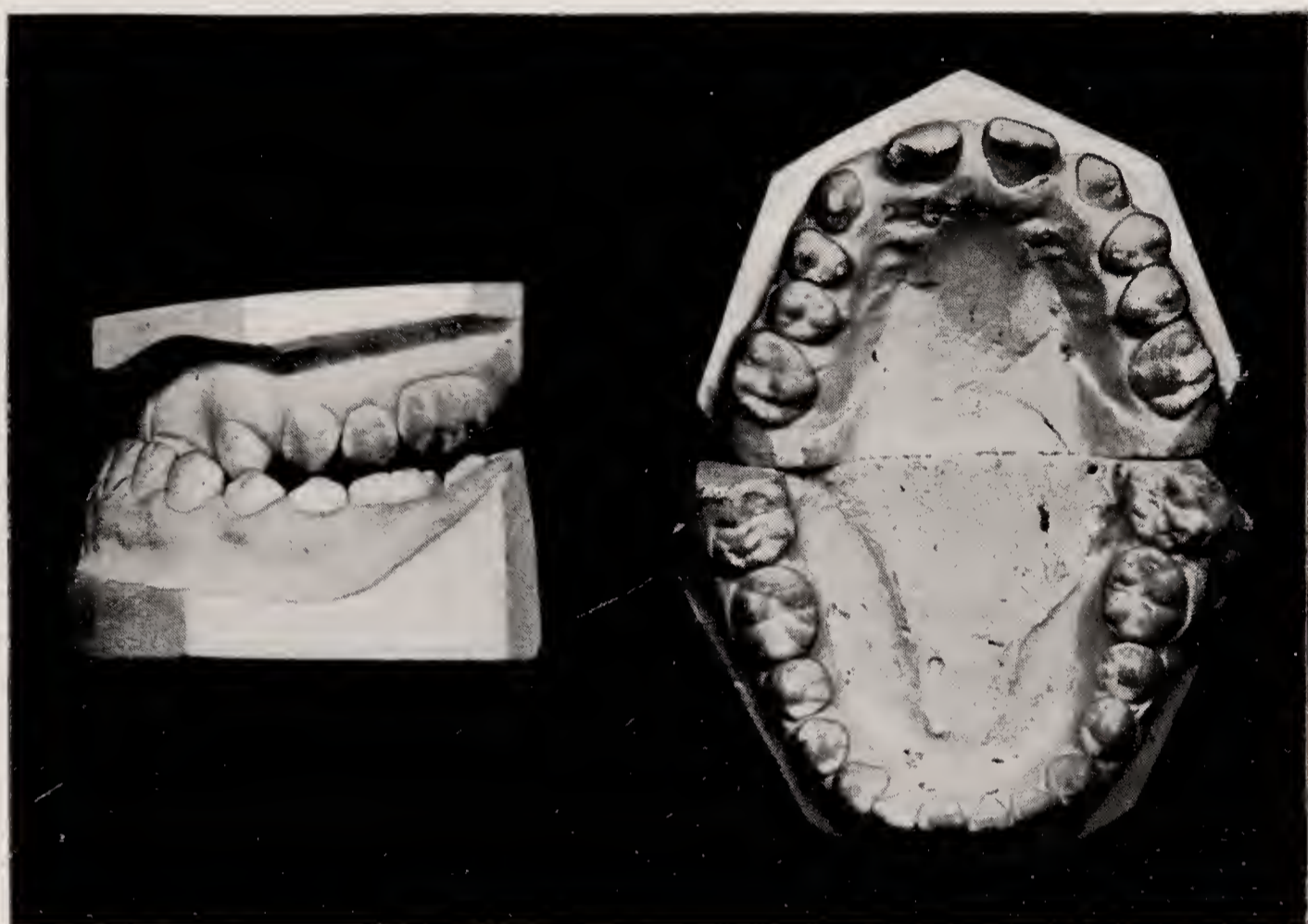
This case had to be treated without the use of a labial wire, so intermaxillary traction was not used : plates were relied upon to bring the mandible forward ; the result in this respect is negative. All the teeth have been aligned and the upper arch widened so that when the mandible is moved forward the teeth are in correct relations and the occlusion is excellent, but the post-normality remains and is seen in the illustration : in that position there is little occlusion.



*Fig. 5. Class II, Div. II, Case No. 1361, F. æt 13-1.*

Cases of this type are not infrequently treated by labial movement of the upper central incisors : this converts the case into an example of Class II, Div. I for which treatment is so often sought : it is doubtful if such treatment is any benefit to the patient.

If, however, the upper arch is widened as well as the centrals moved labially, and conditions are made favourable for forward movement of the mandible by the use of an inclined plane bite plate, the lower jaw and teeth will often come forward without other assistance and materially improve the condition. This type of case is often treated by extraction : then  $\overline{1} \mid \overline{1}$  are not moved labially and so the position of the mandible is not changed.

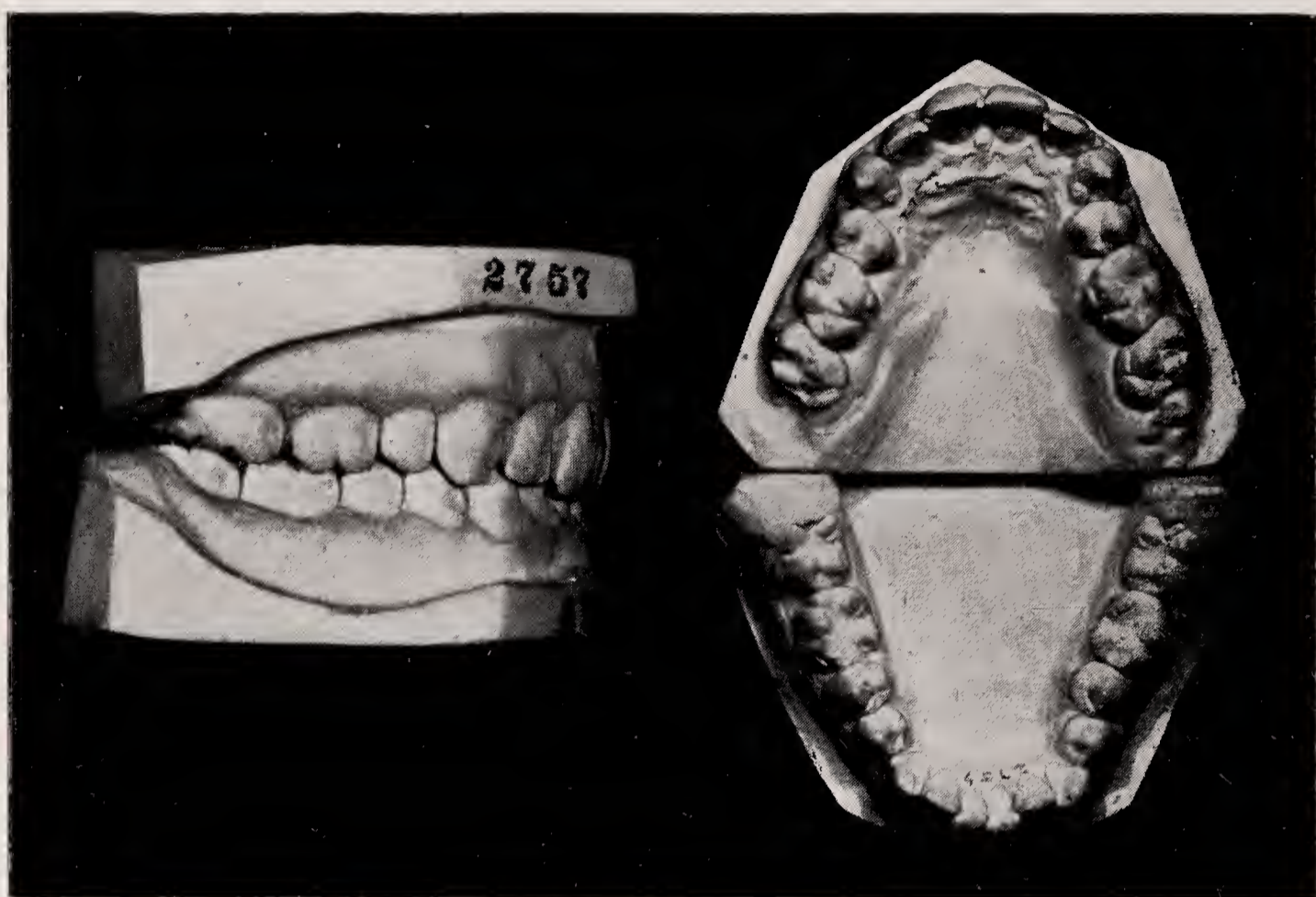


*Fig. 6. Class III, Case No. 2749, F., æt. 12-11. Absence of 2 | 2.*

Treatment was by means of an upper expansion plate which covered the occlusal surfaces of the upper cheek teeth: the overbite was considerable, probably having been increased by depression of the cheek teeth (which is likely to occur when occlusal surfaces are covered). This, in turn, may have effectively prevented any amelioration (though in this case it could hardly be expected) of the pre-normality, though expansion alone in younger children has been reported to be successful in correcting the condition.

We are often urged to undertake treatment which we know will not benefit the patient and yet our resistance is insufficient and we yield, hoping against hope that the desired result will be obtained.

Here are two cases of such a type :

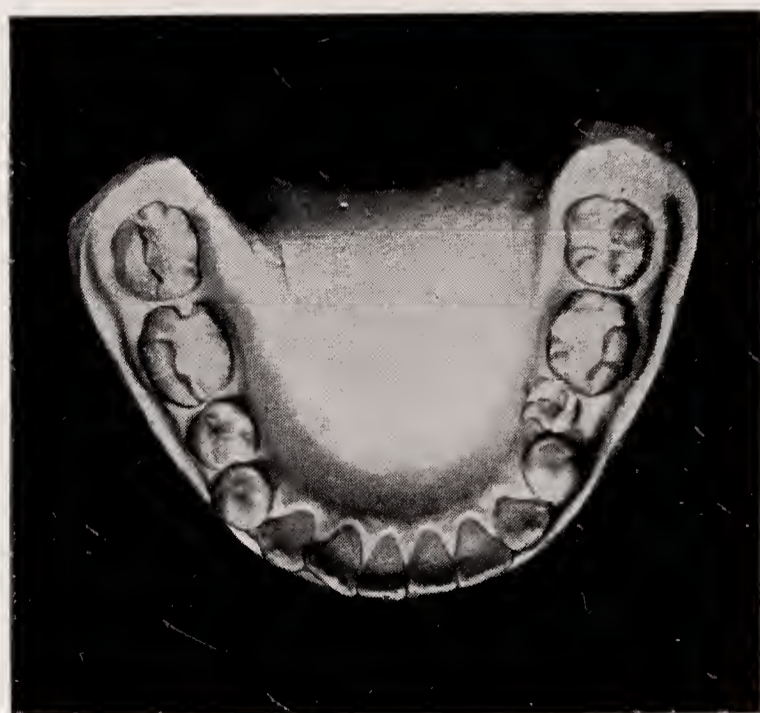


*Fig. 7. Case No. 2757, F., æt. 19-4.*

This girl has excellent alignment of the upper incisors ; the upper first premolars were removed some years ago ; there is some imbrication of the lower incisors which are not easily kept clean in their " sheltered " areas, and it was suggested that if they were " straightened " they would keep clean naturally. I did not hesitate to advise against any treatment for that purpose. If the lower arch were enlarged it would involve enlargement of the upper arch ; already some teeth were spaced in that arch : if a lower tooth were removed there is risk that the lower arch would contract, accompanied by contraction of the upper arch, which would probably appear as irregularity of the upper incisors.

*Fig. 8. Case No. XXX, F., æt. 24.*

This patient had an excellent set of teeth—appearance perfect—the left lower second premolar is in considerable lingual occlusion and the dentist wished to remove it as it collected tartar and there was some gingivitis ; its removal might not eliminate these troubles entirely, but it would ruin the perfection of alignment of the upper anterior teeth if both arches contracted. I advised the dentist that



the patient would condemn him in no uncertain terms if that occurred and told him to leave well alone : a bird in the hand is worth two in the bush.

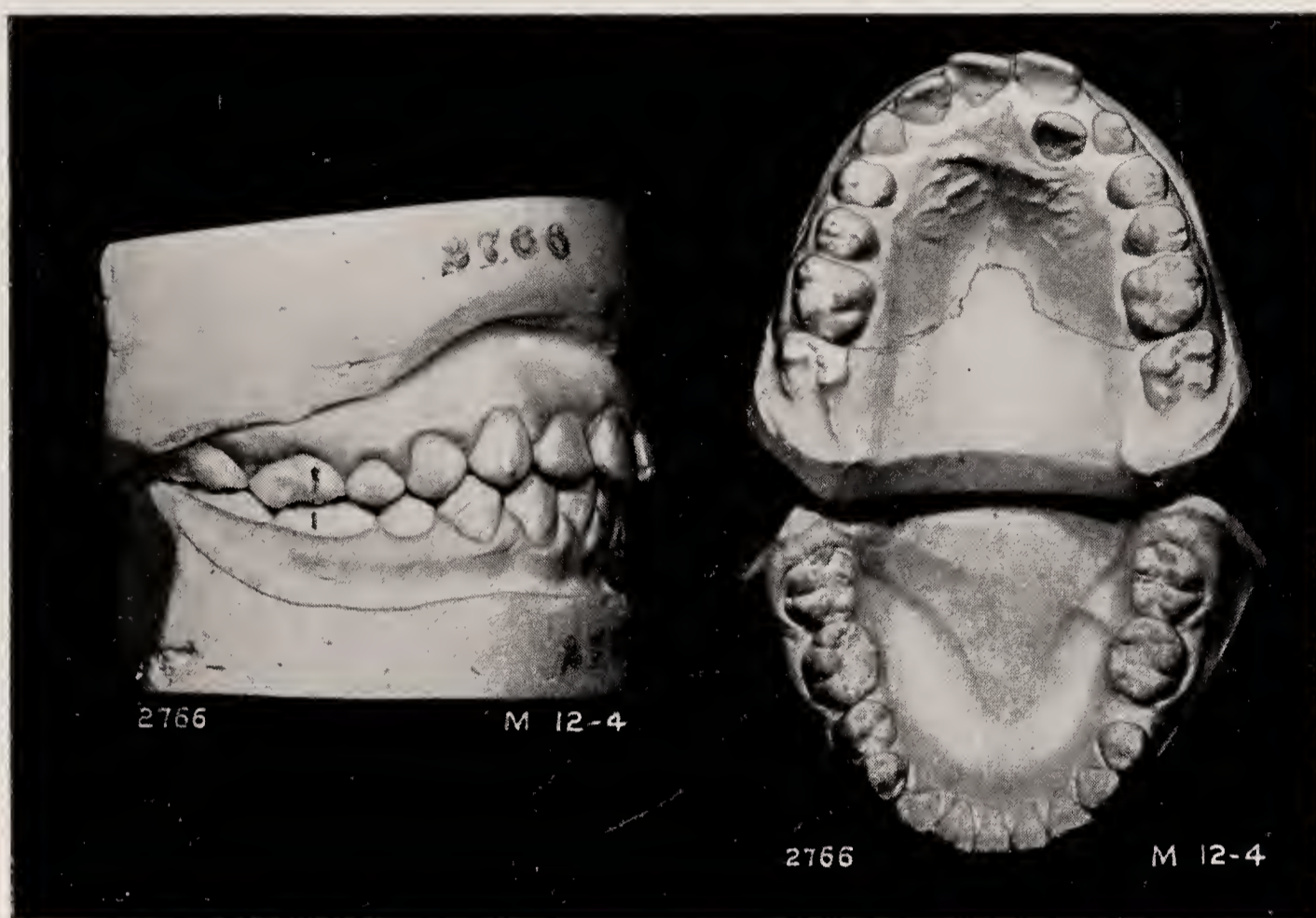


Fig. 9. Case No. 2766, M., æt. 12-8.

This boy has a good set of teeth in good alignment and occlusion, but the left upper lateral is instanding: the space for it is considerably too small: he has been treated by several colleagues and at one time numerous teeth were banded: no improvement has been obtained. His parents were advised that the removal of  $\overline{2}$  was the best solution of this problem, and that in a few years the space resulting from the loss of the lateral would be closed by drifting of the teeth, chiefly of the left side medially: probably this has already occurred.

Good upper arch, perhaps a little small and/or perhaps  $\overline{1} \mid \overline{1}$  have drifted to the left and  $\overline{456}$  have drifted medially.  $\overline{2}$  is lingual to arch. Whichever diagnosis is correct extraction of  $\overline{2}$  is best treatment. Reference to lower arch and to the occlusion leads one to the conclusion that the arches are good and that the irregularity is a local one.

Good lower arch:  $\overline{5}$  semi-impacted, probably result of medial movement of  $\overline{67}$ . Removal of a tooth not advised, though in the case of a normal arch such as this, it probably would not be harmful though it might not be good. In an adult with good alignment of upper incisors do not remove a lower tooth, as if lower arch collapsed it would probably react on the upper and result in some malalignment there.

The side view shows perfect occlusion and alignment of teeth of the right side, on the left side  $\overline{2}$  and  $\overline{5}$  are in lingual occlusion.

The dental profession is so accustomed to act that when asked to do something it is apt to assume there is no answer except action,

but in orthodontics there are many cases where no action, or limited action, is the better policy. Our guide must *not* be what can be done in the way of arranging teeth, but what is best for the ultimate benefit of the patient, and this rests *not* on theoretical considerations but on clinical experience of which there is ample ; but unfortunately it is not made available.

### Discussion.

The PRESIDENT said that Mr. Chapman's address had been most interesting and he had given some extremely good advice, especially on the question of little or no action being taken in many cases.

Mr. S. A. RIDDETT asked Mr. Chapman at what age he considered it was advisable to remove a lower premolar tooth or whether he thought it should always be retained. He thought Mr. Chapman had rendered a very great service by drawing particular attention to the danger of reducing the lower arch by taking out premolars, with the consequent effect of crowding in the upper arch.

Mr. ROBERT CUTLER said he thought Mr. Chapman's remarks would be of special interest to younger members, whose experience of clinical orthodontia had perhaps been largely confined to the cases they had seen at hospital, in which there was very often gross loss of space, due to early loss of, or interstitial caries in, the temporary teeth so that the eventual removal of permanent teeth became a routine measure. When those members started in private practice, they met an entirely different type of case, in the sense that there was often no real encroachment on the space available for the permanent teeth, but none the less their inclination to take definite action, in the form of extraction, remained, and this action Mr. Chapman had quite rightly deprecated. In referring to the danger of removing premolars from the lower jaw, Mr. Chapman was particularly referring, he presumed, to Class II cases, where some treatment had already been carried out in the upper arch and where he had considered it wise to leave the lower arch in a slightly crowded condition. There was, of course, the other type of case, strictly Class I in nature, where some crowding of tooth units in the upper jaw had suggested the removal of a pair of them, and, because the lower arch had looked reasonably good, the extractions had been confined to the upper jaw, with extraordinarily good results. It was very irritating, however, perhaps five years later, to see the result of not having removed a pair of premolars from the lower jaw when the upper premolars were removed, for the crowding that developed in the lower arch very often caused an out-locking of the canines. Therefore, whilst he agreed that there were dangers in removing tooth units from the lower jaw, he thought that it should be realised that this did not necessarily apply to strictly Class I cases.

Mr. H. G. WATKIN, referring to the case in which Mr. Chapman had removed two lower premolars, asked whether he had ever thought of treating that case with a mouth shield.

Mr. A. L. PACKHAM said that Mr. Chapman's Communication was very valuable. He thought that orthodontists should always bear in mind that their speciality was simply a matter of bone growth.

Mr. HAROLD CHAPMAN, in reply to Mr. Riddett's question, said that in the particular case to which he referred he would allow the premolar to remain as long as possible ; he did not see that there would be any great advantage in removing it, and certainly there would be the risk of something untoward occurring. He adopted that point of view in

all doubtful cases. When the arches were normal, he did not think there was very much harm in losing a premolar; the arches did not seem to collapse in the same way as arches that were too small, which seemed to be only too ready to become smaller. In Class III cases, the spaces for the lower premolars, although the deciduous molars were absent, did not seem to close but remained for a long time. At the London Hospital there had been two or three cases in which the premolars had been very loth to come up, although there had been no deciduous molars for years and the children were past the age for their eruption; he had kept the spaces for a time and then had removed the apparatus but the spaces had not closed. He entirely agreed with Mr Cutler that in a postnormal case, a lower tooth should never be removed, but he coupled with that the fact that any septic teeth should be removed at once, whatever the orthodontic condition might be. Obviously the general health was far more important than the orthodontic health. In the case that he had shown in which he had removed two lower premolars in order to bring back the canines, he thought that treatment had been and would be quite satisfactory. It had not occurred to him to use a mouth screen in that case. He had no doubt that would have got the upper incisors back, but whether it would have had the desired effect on the canines he did not know. In any case he did not think it would have been wise to take the risk, because there was only the space necessary for the canines to go back, and, while they were going back naturally, if they would have done so, the back teeth would have been coming forward at the same time, so that the space would have been too small for the canines. Therefore he thought it was much better to use some appliance which would be definite in its action and put the teeth where one wanted them to be. Incidentally he might add that he did not institute any treatment for the upper incisors. Mr. Cutler had referred to the locking of teeth. He was not convinced that there was any prevention of teeth moving forward on account of the occlusion of the opposing teeth, so he rarely took that into consideration (lingually locked upper incisors are an exception). He believed that, whatever the occlusion, the back teeth would move forward and tend to close the space: here again there are exceptions and one he had already referred to.

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A MEETING was held on Monday, January 13th, at 8 p.m., when Mr. H. C. Apperly read a short communication entitled "The Orthodontic and Prosthetic Treatment of a Case of Cleft Palate"; and Mr. R. Bradlaw another on "Malocclusion in Animals." The president then gave his address, "The Faculty of Observation, with Particular Reference to Orthodontics."

At a meeting on February 3rd, Mr. T. Dagger, Mr. T. Winn, Mr. H. Chapman and Mr. H. C. Visick presented reports on the "Dentition of Twins." Dr. David Imrie and Miss C. Smyth read a paper on "Radiology as an Aid to Diagnosis."

On March 2nd, Mr. Wilton Thew read a short communication on "A Case of Lingual Occlusion," and Mr. L. Russell Marsh a paper on "Some Controversial Problems."

THE Demonstration Meeting was held on May 4th and the following demonstrations were given:

Mr. G. F. CALE-MATTHEWS: "Rhodium Plating, and Some Appliances."

Miss L. M. CLINCH : " Designing Appliances."

Mr. H. R. EVANS : " Exhibition of Cases treated at a School  
Orthodontic Clinic."

Miss K. C. SMYTH : " A Series of Models of Children between  
the ages of 5 and 6 years."

Mr. H. G. WATKIN : " A New Stainless Steel Incisal Hook ";  
" Teaching Models."

At a meeting on October 5th, Mr. A. McLeod gave " A Further  
Report on Missing Laterals in Three Generations," and Mr. Robert  
Cutler read his paper on a " Classification of Cases from the Stand-  
point of Practical Treatment," and showed a cinematograph film  
to illustrate the points.

On November 2nd, Mr. B. Bane presented a short communication,  
" Entire Lack of Occlusion of Molars and Premolars "; and Mrs.  
L. Lindsay delivered a paper on " Foreign Orthodontic Literature."

The following new members were elected during the year 1936 :—

W. A. Steiner, B.D.S.Lond., 60, The Drive, Ilford ; J. F. A.  
Smyth, L.D.S.Eng., Hazeldene, The Avenue, Hatch End, Middlesex ;  
G. H. Ellingham, L.D.S.Birm., 39, London Road, Reading ;  
H. Richards, L.D.S.Eng., Guy's Hospital, S.E.1 ; Israel Jacobs,  
L.D.S.Eng., 5, Stanhope Terrace, W.2 ; F. E. Gillieron, H.D.D.,  
L.D.S.Eng., 6, Harlington Place, Carlisle ; W. Russell Logan,  
L.R.C.P.&S., L.D.S.Edin., 1, George Square, Edinburgh.

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THE Annual General Meeting for the year 1936 was held at  
Manson House, 26, Portland Place, W.1, on Monday, December  
7th, 1936, at 8 p.m. The President, Mr. F. BOCQUET BULL,  
occupied the chair.

#### MINUTES.

The minutes of the ordinary meeting held on Monday, November  
2nd, 1936, were read by the hon. secretary and were confirmed  
and signed.

#### ELECTION OF OFFICERS AND COUNCILLORS.

THE PRESIDENT announced that no private nominations had  
been received, so a ballot would not be necessary, and he declared  
the following, who had been nominated by the council, to be  
duly elected :—

President	..	..	..	..	Mr. F. St. J. STEADMAN
Immediate Past-President	..	..	..	..	Mr. F. B. BULL
Vice-Presidents	..	..	..	..	{ Mrs. L. LINDSAY. Mr. H. C. VISICK. Mr. S. A. RIDDETT.
Secretary	..	..	..	..	Mr. R. CUTLER.
Treasurer	..	..	..	..	Mr. H. R. EVANS.
Curator	..	..	..	..	Mr. L. R. MARSH.
Librarian	..	..	..	..	Miss K. C. SMYTH.
Editor	..	..	..	..	Mr. M. A. RUSHTON.
Councillors	..	..	..	..	Mr. A. L. PACKHAM. Mr. R. E. RIX. Mr. O. N. CATCHPOLE.

#### ELECTION OF AUDITORS.

Mr. T. Winn and Mr. K. E. Pringle were elected as auditors for the ensuing year.

#### HON. TREASURER'S REPORT.

The amount of subscriptions received during the past year has been £260 19s., which is £12 2s. 7d. less than the previous year. The income from other sources amounted to £8; bringing the total up to £268 19s., as compared with £278 12s. 9d. last year. The expenditure for the year has amounted to £275 16s. 5d., which is an increase of £56 12s. 9d. on the expenditure during 1935. This increase in expenditure is mainly due to three items, namely: extra cost of printing, more expense in connection with demonstrations and papers, and the cost of the Lunch in connection with the Empire Meeting. There is therefore a debit balance of £6 17s. 5d. on the year's working.

The Society's assets are as follows:—

500 National Savings Certificates at a present value of £578 15s.; 2½% Consolidated Stock, purchase value £250; cash on deposit, £10; cash at bank and in hand £106 7s. 4½d., making a total of £945 2s. 4½d. as against £937 os. 5d. last year.

Mr. G. NORTHCROFT said he was interested to hear the treasurer's report and to know how carefully the Society's finances were being conserved. In moving the reception and adoption of the report, he suggested that some of the Society's money should be spent in the purchase of an epidiascope, if permission could be obtained for it to be kept at Manson House.

Mrs. L. LINDSAY seconded the motion, and it was carried.

#### REPORT OF THE HON. SECRETARY.

THE HON. SECRETARY (Mr. R. Cutler) said that a review of the past year showed that interest in the Society's work was being maintained. Seven meetings had been held on the usual dates, the papers and communications having been of considerable interest and scientific value. During the year a luncheon to the delegates at the Empire Dental Meeting had been sponsored by the Society. An examination of the membership showed that 5 members had resigned and 11 new members had been elected, so that the total strength was 270, as compared with the previous total of 264. In this connection it should be noted, however, that the average attendance at meetings had been less than in the two previous years, but it was hoped that the programme for 1937, now in preparation, would maintain the keenness of members.

On the motion of Mr. F. ST. J. STEADMAN, seconded by Mr. MAXWELL STEPHENS, the report was received and adopted.

#### REPORT OF LIBRARIAN AND CURATOR.

Miss K. C. SMYTH reported that the policy of the Library and of the Museum was under consideration at the moment by the council and would be settled during the coming year.

The report was adopted.

THE PRESIDENT tendered the thanks of the Society to Mr.

Morris, Mr. Winn and Mr. Chapman for their case reports, and to all those who had taken part in the discussion upon them.

#### PRESIDENT'S VALEDICTORY ADDRESS.

THE PRESIDENT then delivered the following valedictory address :—

Gentlemen, the time has now arrived for me to vacate this chair, and in so doing to bid you farewell as your president. Item 5 of our Agenda to-night reads the "President's Valedictory Address." It is perhaps as well that this item is not worded "The President's Swan-Song," for I see that Pliny in his "Natural History," states that swans, a little before their death, sing most sweetly. For your peace of mind and the well-being of your auditory apparatus, I will say at once that I have no intention of troubling you in such a manner, but will confine myself to a few words only, rendered in a much more prosaic form.

Firstly, I should like to tender my grateful thanks to the officers and councillors of the Society for their unstinted help during the past year. It has often been pointed out in the past that these positions are no sinecure, and I can again lay emphasis on that to-night. I have held the office of secretaryship, although not of this Society, and I know the arduous duties that it involves. I have not held the office of a treasurer, but I do know that its duties, perhaps if not quite so strenuous, are even perhaps more responsible, and to these as your chief officers I am more than indebted.

To your immediate Past-President, Vice-President, Curator, Librarian and Councillors I am equally indebted, and I thank them all. Lastly, I must thank you, the members, for your unfailing help to me by your general kindness in upholding me in my office. The past year's activities, I think we can well claim, have not fallen behind those of other years, and in some ways have definitely exceeded them. The meetings have been liberally supplied with good material, and perhaps not one of us can quite realise what this means as well as Miss Smyth to whom this work chiefly falls, and for which the Society owes to her a deep debt of gratitude. I often wonder whether, far down in the innermost recesses of her heart, she does not often wish that meetings were made for papers, and not papers for meetings. I need not remind you of another activity into which the Society launched itself very successfully only recently, in offering its hospitality to the overseas delegates at the Empire Meeting.

The council has had under consideration the question of an annual dinner, but the replies received to the circular notice sent out by the honorary secretary tend to show that the members of this Society are rather too sedate to indulge yet awhile in such a function.

There is one point to which I should like to draw the attention of all members of the Society, a point which I believe has already been mentioned on one of the notices of meeting of this year, and, therefore, probably unobserved, and that is the offering of Casual Communications. I feel that a certain amount of valuable information is lost, or rather should I say allowed to die for want

of circulation, in members not bringing forward communications which can rightly be called Casual. I see that on to-night's agenda three communications that have been presented are described as "casual". With all due respect to the powers-that-be, and for the purpose of my argument, I think that "Short Communications" would have been the better title, and that the title "Casual" should be applied to those Communications taking only a few minutes in time, which could be asked for in a routine manner at the commencement of each meeting, and delivered then and there without any notice having been given. In this way I am certain that much matter which in quantity might be felt to be too little to bring to the notice of the Society, might in quality prove to be of a very valuable nature.

And now, gentlemen, my swan-song finished, my one remaining duty, and the last pleasure associated with my year of office, is the induction of your new president into the chair.

#### INDUCTION OF THE PRESIDENT-ELECT.

Mr. F. ST. J. STEADMAN, the newly elected president, was then inducted into the chair by the retiring president, Mr. F. Bocquet Bull, who, in investing Mr. Steadman with the badge of office as president, said he sincerely hoped and trusted that Mr. Steadman would have as happy a year of office as he himself had had during the past year.

Mr. STEADMAN took the chair amidst applause, and said that at the next meeting he would have an opportunity of thanking the members for the very great honour they had conferred upon him in electing him as president of the Society.

#### VOTE OF THANKS TO THE RETIRING PRESIDENT.

Mrs. L. LINDSAY, in moving a very hearty vote of thanks to the retiring president, said that Mr. Bocquet Bull had been an outstanding figure during the past year. His Presidential Address had called upon the members to make careful observations in their work, and he had maintained that standard throughout the year.

Most markedly he had excelled in his chairmanship at the luncheon at which the Society had entertained the overseas visitors at the Empire Dental Meeting.

The motion was seconded by Mr. TREVOR JOHNSON and was carried with acclamation.

#### VOTE OF THANKS TO THE OFFICERS OF THE SOCIETY.

On the motion of Mr. HAROLD CHAPMAN, a vote of thanks was accorded to the hon. secretary, the hon. treasurer, the librarian, and the other officers of the Society, and the meeting then terminated.

BRITISH SOCIETY FOR THE STUDY OF ORTHODONTICS.

INCOME AND EXPENDITURE ACCOUNT, 1935-1936.

STATEMENT OF ACCOUNTS.

1934-1935.		1935-1936.		INCOME.		EXPENDITURE.		1934-1935.		1935-1936.		
£	s. d.	£	s. d.			£	s. d.		£	s. d.	£	s. d.
273	1 7	260	19 0	To Members' Subscriptions	...	...	...	Rent	50	0 0	...	...
0	7 8	0	1 0	„ Deposit Interest	...	...	...	Printing and Transactions	68	15 6	...	...
5	3 6	6	18 0	„ Interest on Consolidated Stock	...	...	...	Reporting	18	18 0	...	...
—	—	1	1 0	„ Sundry Credit	...	...	...	Refunded Subscriptions	3	3 0	...	...
								Refreshments and gratuity to porter	21	15 0	...	...
278	12 9	—	—	„ Transfer from Deposit Account	...	...	...	Honorarium—Mr. Yarrow	26	5 0	...	...
180	0 0							Hire of Electric Standards and Tables	4	18 0	...	...
								Petty Cash	14	10 0	...	...
458	12 9	268	19 0					Bank Debits	0	8 8	...	...
10	10 11	6	17 5	Debit Balance	...	...	...	Insurance on Books and Badges	0	15 0	...	...
								Slides and other Demonstration Expenses	7	6 0	...	...
								Income Tax	0	12 0	...	...
								Lantern Attendant	1	17 6	...	...
								Purchase of Consolidated Stock	250	0 0	...	...
								Expenses of Empire Meeting Lunch	—	—	...	...
£469	3 8	£275	16 5						£469	3 8	£275	16 5

ASSETS.		1935-1936.	
		£	s. d.
500 National Savings Certificates—Present Value	...	£578	15 0
2½% Consolidated Stock—Purchase Value	...	250	0 0
Deposit at Bank	...	10	0 0
Cash at Bank	...	96	16 0
Cash in Hand :			
Secretary	£5 0 2		
Librarian	3 6 11½		
Editor	0 16 1		
Treasurer	0 8 2	9	11 4½
TOTAL		£945	2 4½

We have examined the Books and Vouchers of the Society and certify the above Statement of Accounts to be correct.

STEWART W. SOUTHWOOD.  
JAMES A. HUDSON.







